International Boundary Commission

United States/Canada

Joint Annual Report

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INTERNATIONAL BOUNDARY COMMISSION

COMMISSION DE LA FRONTIÈRE INTERNATIONALE

The Honorable Madeleine Albright
The Secretary of State for the United States
Washington

The Honourable Lloyd Axworthy
Minister of Foreign Affairs and International Trade
Ottawa

Dear Ms. Albright and Mr. Axworthy:

We have the honor to submit herewith to each government a joint report of the Commissioners upon the maintenance and regulatory work performed with the respect to the International Boundary between the United States of America and Canada. This report covers the Calender year 1996 and is produced under the provisions of Article IV of the Treaty of Washington, February 24, 1925.

Respectfully submitted,

Thomas L. Baldini
Commissioner
United States

Michael O'Sullivan
Commissioner
Canada

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Table of Contents

	Page
Summary	*1*
Introduction	*2*
Thomas L. Baldini, Commissioner, United States Section	*5*
Michael J. O'Sullivan, Commissioner, Canadian Section	*6*
International Boundary Commission Staff, United States Section	*7*
International Boundary Commission Staff, Canadian Section	*7*
Boundary Maintenance, 49th Parallel: British Columbia-Washington Boundary	*8*
Boundary Maintenance, 49th Parallel: Montana, North Dakota-Alberta, Saskatchewan, Manitoba Boundary	*13*
Boundary Maintenance, 49th Parallel: Manitoba-Minnesota Boundary	*17*
Boundary Maintenance, 49th Parallel: Minnesota-Manitoba Boundary	*19*
Boundary Maintenance, Lake of the Woods to Lake Superior, Ontario-Minnesota Boundary	*20*
Reconnaissance and Surveying, Lake of the Woods to Lake Superior, Ontario-Minnesota Boundary	*26*
Reconnaissance and Surveying, Lake of the Woods to Lake Superior, Ontario-Minnesota Boundary	*29*
Boundary Maintenance, West Line, New York-Quebec Boundary	*32*
Commissioners' Inspections	*37*
Events	*39*
Regulatory Work	*40*
Preview of 1997	*41*
Certified Statement of Expenditures	*42*

Table of Contents
(Cont.)

Page

Appendices

A. Detailed Maintenance and Survey Operations 44

B. Summary of Maintenance and Survey Operations 94

C. NAD83 Geographic Positions, St. Mary's River 96

Summary

The 1996 field season brought IBC crews to some of the most unspoiled and scenic sections of the international boundary.

The physical boundary between the United States and Canada is the longest unfortified boundary in the world. A treaty between the United States and His Majesty the King in respect of Canada, signed at Washington, February 24, 1925, provides for the maintenance of an effective boundary line between the two countries, to be carried out by the International Boundary Commission (IBC). Article IV of this treaty stipulates:

> *"The said Commissioners shall submit to their respective Governments from time to time, at least once in every calendar year, a joint report containing a statement of the inspections made; the monuments and buoys repaired, relocated, rebuilt, moved, and established; and the mileage and location of vistas opened, and shall submit with their reports, plats and tables certified and signed by the Commissioners, giving the locations and geodetic positions of all monuments moved and all additional monuments established within the year, and such other information as may be necessary to keep the boundary maps and records accurately revised."*

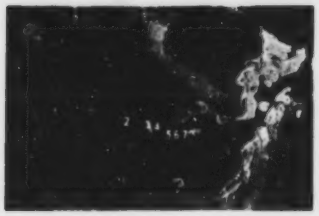
This 1996 Annual Joint Report summarizes the work completed by the IBC's field parties and publishes the new and revised survey data compiled on the many boundary monuments, reference monuments, and control stations encountered in carrying out field activities during the year.

Geographic positions on North American Datum 1983 (NAD83) for the reference monuments and boundary turning points resulting from this year's work from Lake Superior to Lake of the Woods will be published following an overall adjustment of the surveys.

Descriptions were written for all new monuments and, as required, revised descriptions were prepared for existing monuments. These descriptions are available on request.

Included in this report are geographical positions on NAD 83 for the reference monuments and boundary turning points through the St. Mary's River section of the Michigan-Ontario boundary. These positions are from the Global Positioning System (GPS) survey completed in 1994.

Introduction



Field activities for 1996 along the international boundary are described in the following chapters.

The first International Boundary Commission was created in 1794 by the Jay Treaty. Over the years, the United States and Canada appointed a series of temporary commissions to oversee boundary surveys, mapping work, and other duties necessary to demarcate an effective boundary line between the two countries.

By the first quarter of the 20th century, the task of surveying and marking the border was near completion. It was then recognized that the boundary would require constant attention if it was to remain in an effective state of demarcation. Thus the IBC was established in its permanent form by the Treaty of 1925.

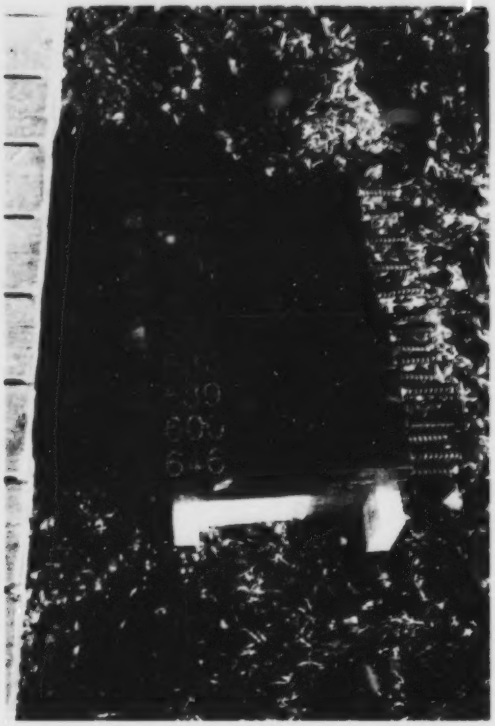
The treaty assigned the IBC Commissioners their current duties:

- inspect the boundary;
- repair or replace damaged boundary monuments;
- establish new boundary monuments as required;
- maintain a clear boundary "vista," a 20-foot/6-meter-wide swath through brush and trees;
- ensure the accuracy of the boundary through surveys; and
- define any portion of the boundary that may be questioned by either government.

The international boundary runs through some spectacular wilderness preserves. The 1996 field activities encompassed some of these pristine and sensitive areas.

For the most part, the IBC conducts its field work from early spring through early fall (the "summer field season"), relying heavily on seasonal employees working under the direction of

permanent IBC staff. A substantial amount of the vista maintenance work is accomplished by contract. Each of the United States and Canadian field parties is assigned specific segments of the boundary in a given year, and each party carries out its work on both sides of the international line.



The Canadian Section used iron posts to replace the original bronze ones. The lettering style is copied from one used in the survey of the 141st Meridian from 1906-1913.

In addition to keeping the boundary clear and well marked, the IBC makes regulatory decisions on proposed projects that are within 10 feet (three meters) of the boundary. It also responds to requests from government and private entities for technical data related to the international boundary line.

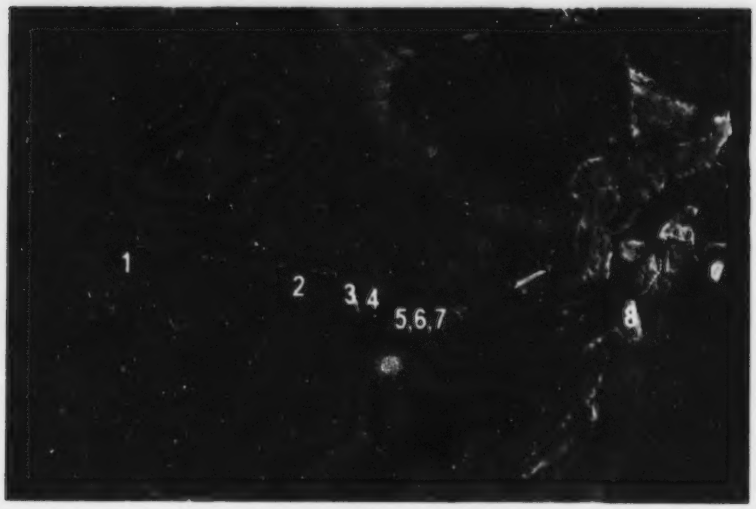
In 1996, boundary maintenance activities were carried out in the following areas (refer to map on page 4, west to east):

- 49th Parallel, British Columbia-Washington boundary: clearing of the vista and inspection of boundary monuments and range towers by the Canadian Section (map no. 1);
- 49th Parallel, Montana, North Dakota-Alberta, Saskatchewan, Manitoba boundary: monument inspection, renewal, and placement by the U.S. Section (map no. 2);
- 49th Parallel, Minnesota-Manitoba boundary: clearing of the vista by both sections (map nos. 3 and 4);

Monuments are routinely "renewed" by cleaning and painting, repairing concrete bases, and clearing brush or rocks from around them.

- Lake of the Woods to Lake Superior, Ontario-Minnesota boundary: surveys; monument inspections, repair, and renewal; and vista clearing along a 423-mile (683-kilometer) section, by three Canadian Section crews (map nos. 5, 6, and 7); and
- West Line, Maine-Quebec boundary: boundary monument maintenance and vista clearing by the U.S. Section (map no. 8).

Field activities for 1996



Thomas L. Baldini
Commissioner, United States Section

Thomas L. Baldini

Thomas L. Baldini of Marquette, Michigan, was appointed Commissioner of the United States Section of the International Boundary Commission by President Bill Clinton, a position he assumed on January 26, 1996. As Commissioner, he oversees the United States' effort to support the IBC's mission to survey, mark, and maintain the physical boundary between the U.S. and Canada.

Mr. Baldini also serves as the chairman of the United States Section of the International Joint Commission (IJC), United States and Canada. He was nominated by President Clinton in 1993 and confirmed by the U.S. Senate in 1994.

Mr. Baldini serves as Commissioner of the IBC without compensation. The decision to have one person lead the U.S. sections of both commissions is in keeping with the Clinton Administration's efforts to streamline and bring increased efficiency to government.

Prior to his appointments to the IBC and IJC, Mr. Baldini was active in Michigan and national politics. As Special Assistant for Upper Peninsula Affairs to Michigan Governor James Blanchard from 1983-1990, Mr. Baldini participated in major economic development decisions and advised the Governor on a wide range of policy issues.

Mr. Baldini also served as Education Advisor to Governor Blanchard from 1985-1989. From 1991-1994, Mr. Baldini worked for Marquette Public Schools. He has also lectured on political science at Northern Michigan University and taught at Marquette Senior High School from 1965-1983.

Mr. Baldini earned his dual bachelor's degree in political science and economics from Northern Michigan University. He has also pursued graduate studies in school finance, school administration, and economics.

Michael J. O'Sullivan
Commissioner,
Canadian Section

Michael J. O'Sullivan

On January 8, 1996, Michael J. O'Sullivan, O.L.S., C.L.S., became Commissioner of the Canadian Section of the International Boundary Commission. Mr. O'Sullivan also serves as Surveyor General of Canada Lands and Director of the Legal Surveys Division of Geomatics Canada.

Mr. O'Sullivan joined the public service in September 1989 as Assistant Surveyor General of Canada Lands and Assistant Director of the Legal Surveys Division. In 1993, the IBC began reporting administratively to the Surveyor General--a position he assumed the next year.

In his public service career, Mr. O'Sullivan led a study which resulted in IBC's integration with the Legal Surveys Division. In addition to directing day-to-day operations, he led the Division through an internal audit, a study of the legislated mandate of the Surveyor General, a comprehensive program evaluation, preparation of a business case and reshaping plan, and a massive reorganization, reengineering, and downsizing.

A long-time resident of Ottawa, Mr. O'Sullivan has a well-established reputation in the surveying field. Educated at St. Michael's College in Toronto, Ontario, he and a partner established Annis, O'Sullivan, Vollebekk, Ltd., Ontario Land Surveyors, in 1964. Its clients included government, utility companies, land developers, and the general public. By 1988, it was rated among the top 10 land surveying firms in Canada, and undertook numerous large projects in practically every facet of land surveying. In 1978, the firm joined with seven others to found Photomap Air Surveys Ltd., completing several large mapping projects for clients such as Public Works Canada and for the Province of Ontario under the Ontario Basic Mapping Program.

International Boundary Commission Staff: United States Section

Marvin D. Crabtree, engineering technician; Rick T. Woodruff, engineering technician; Kyle K. Hipsley, engineering technician; Thomas L. Baldini, Commissioner; Karen L. McCarthy, administrative officer; Clyde R. Moore, Deputy Commissioner

International Boundary Commission Staff: Canadian Section

Joseph Harrietha, field engineer; Michael O'Sullivan, Commissioner; Noel Paquette, engineer to the Commission; Martin Gingras, field engineer; Carl Gustafson, senior field engineer

Boundary Maintenance, 49th Parallel: British Columbia-Washington Boundary

From late February to late March of 1996, Canadian Section Senior Field Engineer Carl Gustafson was charged with overseeing a contract for mowing and clearing the boundary vista between Monuments 5 and 39 (Peace Arch to Vedder Mountain), a distance of 44 kilometers (27.3 miles).

Seven firms were invited to submit bids for the clearing work; Kela Tractor Service of Surrey, B.C., was the successful bidder. A six-member crew for the contract was cleared by both Canadian and U.S. Customs. Mr. Gustafson established his headquarters at Langley, B.C., for the project.

The work was approved and began ahead of schedule, with the clearing crew encountering virtually no impediments along the way. Where the ground was level, the crew employed a wing-mounted mower, using a boom-mounted mower for sidehills. Hand clearing with chain saws and brush cutters was required in some areas where access was poor or where the growth was too large for mowing. The contract crew's work was very professional in each case. In addition to mowing and clearing, they also removed masses of litter and rocks from the vista.

The vista on the south side of "O" Avenue after clearing. With another mowing, grass should begin to establish itself in the vista in place of brush. This will result in a better appearance and easier maintenance.

Kela Tractor completed the project two weeks early, and Mr. Gustafson was completely satisfied with their performance.

The cleared vista east of Monument 35. The contractor was meticulous about removing brush from fence lines.

The field officer also recommended that a new, ornamental monument be placed at the Huntingdon - Sumas border crossing. In addition, new monuments between Monuments 1 and 2, as well as 43 and 44, would be beneficial.

In addition to overseeing the clearing contract, Mr. Gustafson also inspected the monuments from Monument 0 to 4 in Point Roberts and from Monument 5 to 39 in the Fraser Valley. All but four of the monuments were found to be in good condition, although one monument (Monument 30B) was not recovered. During the course of the work, 51 monuments were inspected, one monument repaired, one established, eight points occupied for surveying purposes, and one range tower repaired.

Monument 8, which was found badly off plumb along this well-traveled road, is restored and given a new concrete footing.

To correct problems with intervisibility between Monuments 30 and 32, a new Monument 30AA was constructed between Monuments 30 and 30A. The team took advantage of Global Positioning System (GPS) geographic positions measured in 1990 to properly determine the position of the new monument.

A Leica GPS receiver at Monument 34 is used to determine the position of new Monument 30AA.

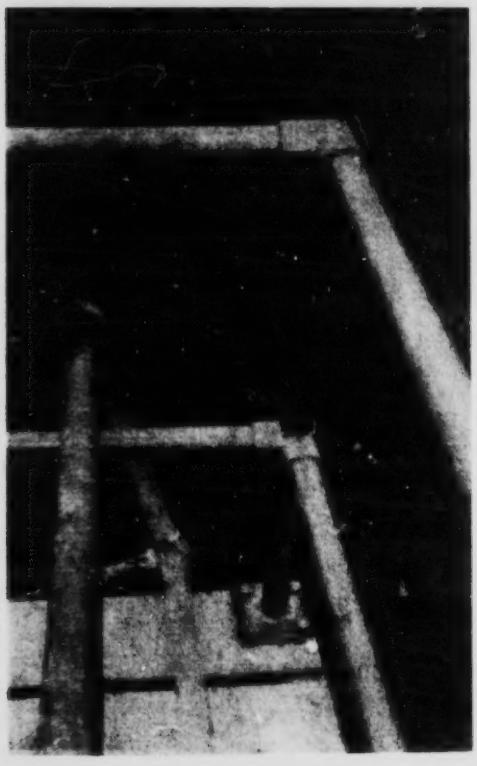
Mr. Gustafson also reconnoitered and performed maintenance on several range towers that give the location of the international boundary over water. At Point Roberts, the vista was cleared around the middle range light, which tends to be blocked by even low vegetation. The condition of four additional towers was observed: Point Roberts West and East Towers, and towers on the east side and shore of Boundary Bay. The railing on the tower on the east side of Boundary Bay was replaced.

Property owners were either contacted directly or left a note regarding the need to remove footbridges from the vista. The Customs and Excise Section of the RCMP in Surrey was also notified.

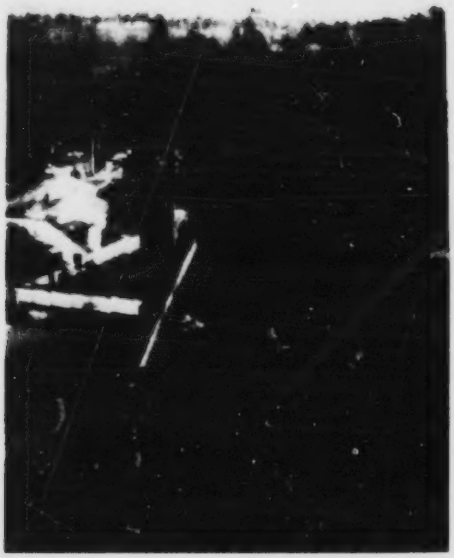
Obstructions and encroachments in the vista at Point Roberts are an ongoing concern. Property owners in the area were sent a letter in 1993 informing them of the need to keep the vista clear; however, a handful of property owners continue to dump litter on the vista and across the boundary; and 13 footbridges encroach on the vista. Mr. Gustafson's crew removed all of the footbridges. When they are informed of the IBC's mission, property owners generally show a good spirit of cooperation.

This railing on the range tower at the east side of Boundary Bay was badly corroded. The ladder on this range tower varies slightly from current B.C. safety standards. Future maintenance of the tower that constitutes more than 25% of the unit will require bringing the ladder up to the current standard.

A new galvanized railing was securely attached before the old one was removed.

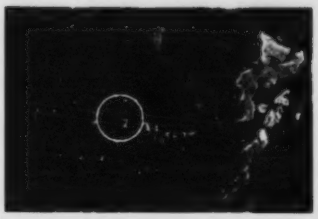


A view east from the middle range tower shows a hedge encroaching on the boundary vista. The property owner has committed to removing the hedge.



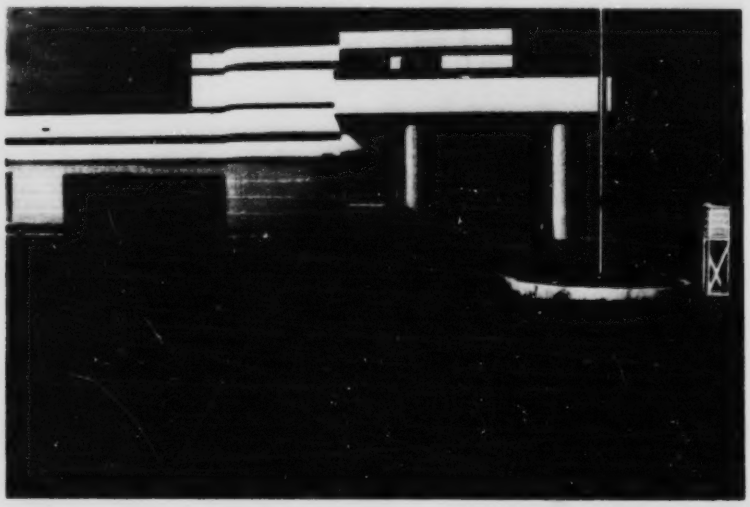
Although experiencing rapid growth of vegetation and land development, the Fraser Valley vista was reasonably clear. There are still hydro-poles along O Avenue and Boundary Road, dating from the 1970s, belonging to B.C. Hydro and Puget Power. In addition, Trans-Mountain Pipelines has a chain link fence directly on the boundary east of Monument 34, which should be removed.

Boundary Maintenance, 49th Parallel: Montana, North Dakota-Alberta, Saskatchewan, Manitoba Boundary



Looking west at Monument 446-AA1 at a port of entry.

Engineering Technician Marvin D. Crabtree, of the United States Section's Western Regional Field Office in Great Falls, Montana, was assigned the task of boundary monument maintenance for the 1996 field season.



Mr. Crabtree hired a three-person crew in June, establishing a summer field season headquarters in Malta, Montana. Remonumentation work began at Monument 475. The crew recovered a total of 144 boundary moments, renewing 39 of them. Another 99 monuments were cleaned and painted. The crew also set 35 intermediate monuments along the boundary. The summer's work ended at Monument 443. All of the monuments scheduled for renewal were recovered.

Monument 447 as recovered.

Monument 447 after renewing.

Rugged terrain in the Frenchman Creek area challenged the crew in July at Monument 483 and Intermediate Monument 483A. Because the equipment could not be brought in close to either monument, the crew packed in instruments, shovels, pry bars, and sonotube on foot. The task of renewing these monuments took several days.

The crew found a challenge in recovering and digging out around Monument 483, which was then replumbed.

Plans for the summer maintenance activities were coordinated with the U.S. and Canadian Customs and Immigration officials at the Ports of Morgan, Montana - Monchy, Saskatchewan; Dunseith, North Dakota - Boisevain, Manitoba; Carbury, North Dakota - Goodlands, Manitoba; Westhope, North Dakota - Coulter, Manitoba; Antler, North Dakota - Lyleton, Manitoba; and Sherwood, North Dakota - Carievale, Manitoba.

Failure of the crew's generator in August also created a delay, although overall the month was a very productive one. With the addition of authorized overtime at the end of the season, the crew was able to keep up its production throughout September.

Throughout the summer season, the crew encountered rock piles around the monuments. Most of the time, they buried the rocks; in a few instances they were able to dispose of them in other existing rock piles. For Monuments 476 and 478, in addition to dismantling and disposing of rock piles, Mr. Crabtree was obliged to order two truckloads of fill dirt to allow for proper backfilling after the monuments were renewed.

Monument 476 after renewing. Huge piles of rocks were removed from around the monument and set aside.

The Summer of 1996 was extremely hot and dry, with no measurable precipitation from June 25 to September 6. With temperatures in the 90s, fires were a real danger. The crew was vigilant in using its equipment wisely to avoid stray sparks.

Deputy U.S. Commissioner Clyde Moore visited the crew in late September, assisting in and observing the renewal procedures. Canadian Commissioner Michael O'Sullivan also visited, observing as the crew renewed the final monument of the summer. The seasonal crew was terminated on September 27.

Early in the year, Mr. Crabtree traveled to Sweetgrass, Montana, to check on the status of the removal of two fences encroaching in the vista by the Coutts Recreation Board and the Coutts-Grass Rodeo Association of Alberta. The recreation board fence had been removed; the Rodeo Association fence was removed in the Spring of 1996.

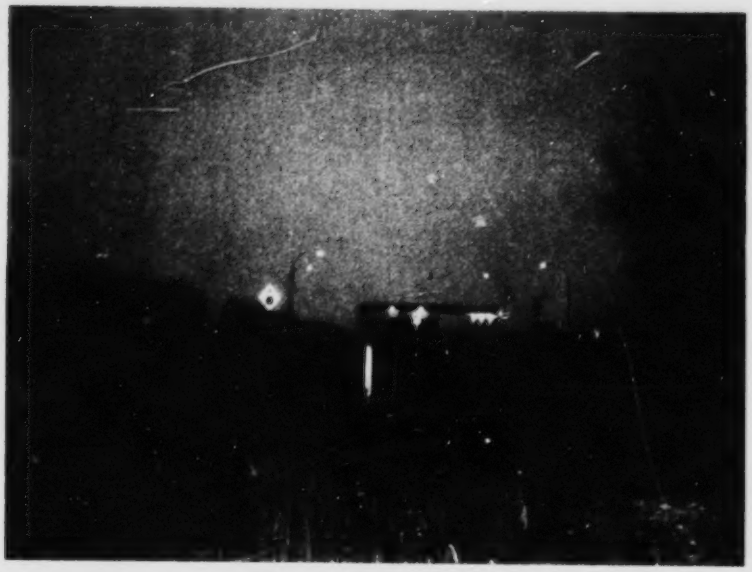
The Coutts Recreation Board fence has been removed from the vista.

Boundary Maintenance, 49th Parallel: Manitoba-Minnesota Boundary

Monument 851 in front of the Canada Customs port of entry south of Toistoi, Manitoba.

Field Engineer Harrietha of the Canadian Section oversaw the successful completion of a contract to clear the vista at the 49th Parallel between Monuments 833 and 866, a distance of 55 kilometers (34 miles). Six contractors were invited to bid on the work; three bids were received.

Henderson's Tree Service of Killarney, Manitoba, was hired after successfully completing a test cutting at Monument 851.

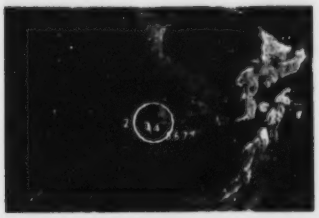


The vista had a growth of mostly two- to four-inch diameter poplars. There are some fences running inside the vista on the U.S. side. Most of this section of the boundary runs through open fields, swamps, and scattered bush and trees.

In addition to the clearing project, eight monuments were inspected.

The tree growth observed at Monument 866, at the end of the vista clearing project, is typical of the growth encountered along this segment of the 49th Parallel.

Boundary Maintenance, 49th Parallel: Minnesota-Manitoba Boundary



In late August, it became apparent to the United States Section that funds were available for a small vista clearing contract. Deputy Commissioner Moore traveled to Minnesota in early September to select an area to be covered under the contract and to meet with potential contractors.

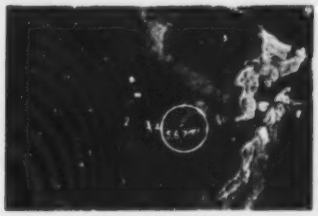
Two days were required to identify a specific area to be worked, and another two days were spent showing the area to two contractors and reviewing contract specifications with them.

Mr. Alvin Nordvick, who has had several contracts with the Commission in the past, decided the scope of the project exceeded his resources at the time. An agreement was reached with Bordun Trucking, Ltd., of Sundown, Manitoba. The contract called for reclearing the international boundary vista to a 20-foot skyline width from Monument 866 to 0.2 mile west of Monument 879, and from Monument 886 to Monument 891, for a total of 18.8 miles (30.2 kilometers). The contract also required disposal by chipping of all slash resulting from the clearing work, plus cleaning and painting the boundary monuments located within the area covered.

Bordun Trucking, Ltd., commenced operations later in the year. By early December, when winter conditions forced suspension of field work, cleaning and painting of the boundary monuments and the reclearing of 17.8 miles of vista had been completed.

The remaining one mile of vista clearing and field inspection will be accomplished in 1997.

Boundary Maintenance, Lake of the Woods to Lake Superior, Ontario-Minnesota Boundary



Canadian Section Senior Field Engineer Carl Gustafson was tasked with recovering and maintaining reference monuments on the segment of the Ontario-Minnesota boundary between Lac La Croix and South Lake during the 1996 summer field season. Reference monuments between Reference Monuments 761 and 944 were to be inspected, and those to be included in the control network between Reference Monuments 503 and 1175 repaired or rebuilt.

There are just three land portages along this stretch of boundary. The assignment for 1996 included clearing the vista at each portage.

A team of five workers was hired, including a student assistant, for the reference monument maintenance work. The foreman had also participated in 1995's monument maintenance effort. Headquarters was established at Ely, Minnesota.

The vista at Swamp Portage is barely visible before clearing. The 1996 clearing project was the first in over 35 years.

The 683-kilometer (423-mile) segment of boundary from Lake of the Woods to Lake Superior is almost entirely over water.

This section of the boundary is in the Boundary Waters Canoe Area Wilderness (BWCAW) and includes Quetico Provincial Park (Ontario Ministry of Natural Resources) and Superior National Forest (U.S. Forest Service). Environmental rules are

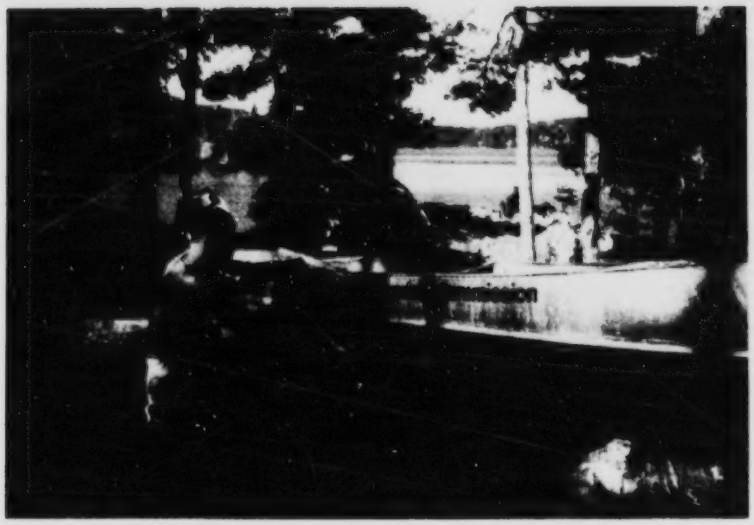
very strict in these areas, and access can be a problem. Therefore, the IBC team was required to camp in the forest for portions of the project.

From Birch Lake to Knife Lake, the crew hauled equipment over five portages around the rapids.

The IBC team coordinated closely with Canadian and U.S. officials in preparation for the summer's work and with officials of the individual parks throughout the season. Although given permission to use motorized boats, which generally are not allowed in the area, the crew restricted their use to the Canadian side and paddled on the U.S. side. A floatplane was also employed at times. The team made every effort to minimize any disturbances their work might cause to campers.

The crew used this Beaver floatplane to move equipment to Knife Lake, carefully observing a regulation to maintain a minimum altitude of 5,000 feet on the U.S. side of the boundary.

In the BWCAW, where the use of outboard motors is severely restricted, the crew took care to identify itself to minimize questions on the part of visitors to the wilderness.



The Geodimeter 440 Total Station was the principal surveying equipment used for recovering monuments. Operated with ease for distance and direction measurements, it gave the crew a tremendous advantage over the traditional method of intersecting lines with a theodolite.

The Geodimeter 440 total station positioned at a reference monument.

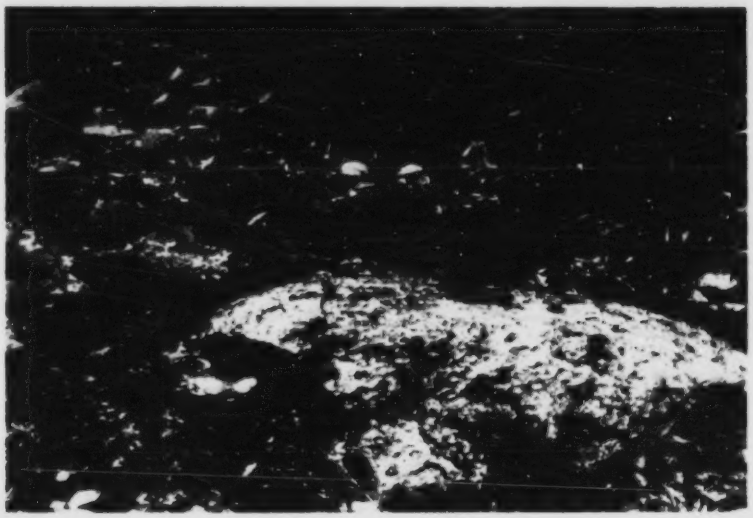
From Reference Monument 506 to Reference Monument 944, the main area where maintenance was carried out, all but one monument is set in an outcrop or in a boulder. In many cases, the marker had disappeared, but in general the positions were not difficult to find with the total station. A total of 439 reference monuments were involved in the project, and all but four were recovered.

This tree, which had begun to surround Reference Monument 514, was completely removed.

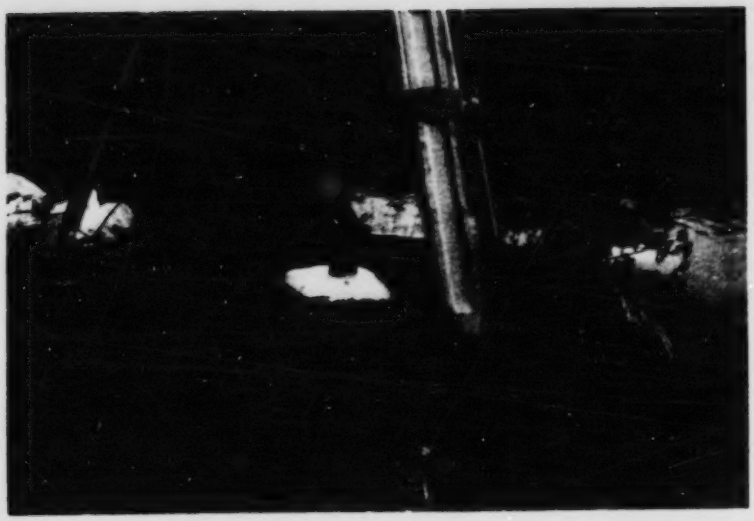
Vandalism is a concern in the BWCAW area, where some reference monuments apparently have been taken as souvenirs.

Reference Monuments 511, 556, and 881 are considered lost, and Reference Monument 835 was replaced with Reference Monument 835-96 because of its strategic location at the Prairie Portage dam. Reference Monuments 549-96 and 823-96 were established near the original points where the monuments were broken and unsuitably located for repair. A total of 65 reference monuments were rebuilt.

Moss had grown up to eight inches thick over reference monuments. Here is Reference Monument 912 after moss was removed.

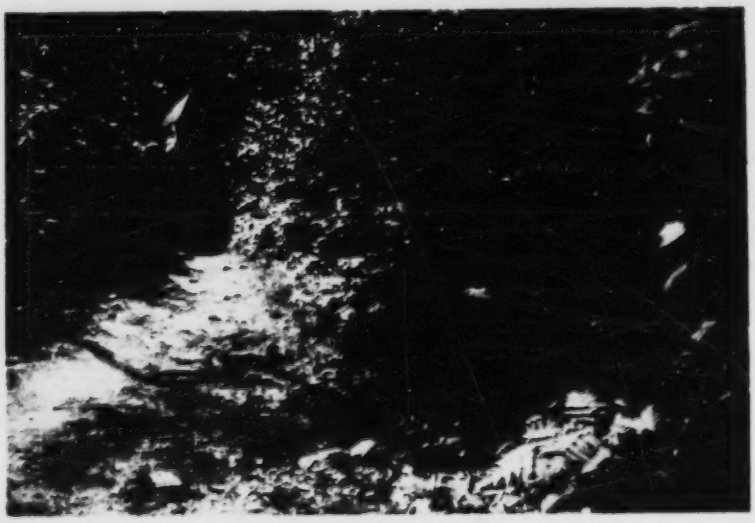


Monument 860 was rebuilt with an iron post. Concrete forms the new setting, replacing the original crumbling rock.



The vista clearing project undertaken at the three land segments, Swamp, Height of Land, and Watap portages, covered 1.3 kilometers (0.8 miles), and was the first of its kind since 1960. Therefore, the boundary vista was overrun with growth and could scarcely be discerned from the air or on land.

This portage trail follows the vista between Monuments 2 (Turning Point 767) and 1 (Turning Point 766), which was completely blocked.

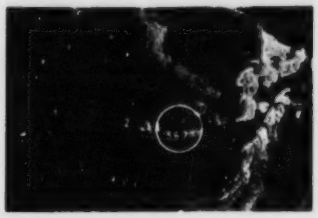


The vista between Monuments 2 and 1 after clearing.

Because the vista runs through parkland, the crew was careful to thin the trees judiciously and leave low vegetation in place to cover any stumps. The crew noted that seven of the nine boundary monuments along the portages should be reconstructed.

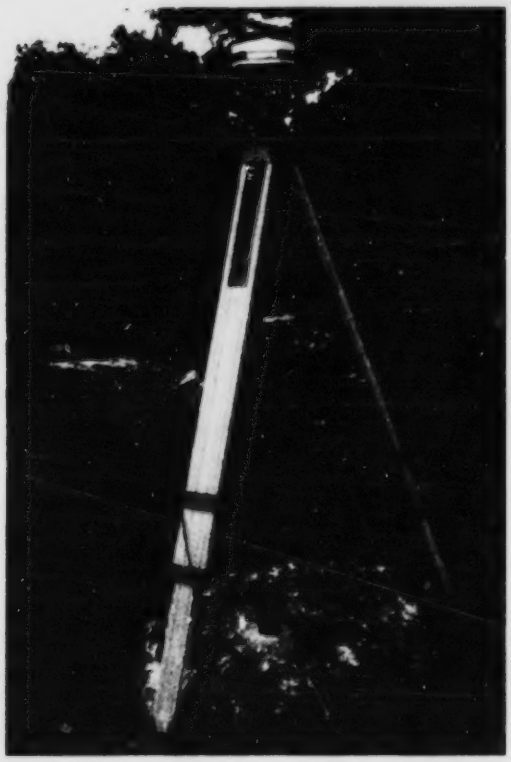
The cleared vista beyond Monument 8, looking toward Monument 7. Old wood downed in the vista by other causes was limbed and left to finish decomposing naturally.

Reconnaissance and Surveying, Lake of the Woods to Lake Superior, Ontario-Minnesota Boundary



Field Engineer Joseph Harrietha led the second team from the Canadian Section to survey the 683-kilometer (423-mile) section of the boundary from Lake of the Woods to Lake Superior. This multi-year survey effort has been undertaken by the Canadian Section to improve the accuracy of the geographic positions of the turning points of the Ontario-Minnesota boundary before converting them from the North American Datum of 1927 to the modern-day NAD83.

This crew was responsible for reconnaissance of monuments between Reference Monuments 503 and 761 and the GPS positioning of Reference Monuments 325 to 947. In all, 258 reference monuments were sought and 231 were recovered; 16 of these required repairs. A total of 27 monuments were considered lost or destroyed; however, 23 of these were found later by another crew. As in other cases in this area, the main cause of damage to the monuments appeared to be vandalism.

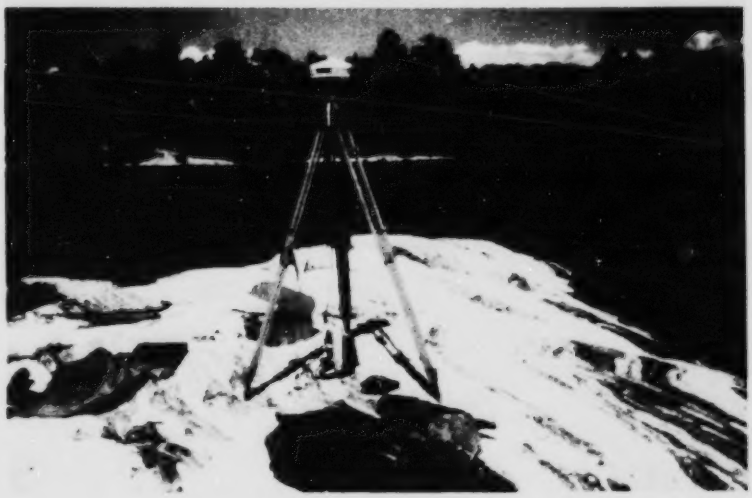


Reference Monument 467, on a large boulder at the head of the Loon River.

The international boundary is measured by a series of straight lines; each deflection is called a "turning point." On land, turning points are physically marked, while over water they are defined only by a geographic position in latitude and longitude.

The GPS positioning involved static and rapid static observations. A total of 18 main stations, 148 secondary stations, and 12 (six Canadian and six U.S.) control stations were observed in 34 sessions. The crew of Field Engineer Roger Shreenan joined this crew for the GPS portion of the survey. GPS training was provided in advance of the survey.

The crew employed Wild GPS receivers. Limited battery power posed a challenge during the GPS survey.



A 12-volt dry cell battery powered this GPS receiver at Reference Monument 347, ensuring sufficient energy for several days of GPS observations at different sites.

Although the crew received permission to use motorized boats on the Canadian side of the boundary, similar permission could not be obtained from the U.S. Forest Service.

Five seasonal employees were hired to compose Mr. Harrietha's crew. Headquarters for the summer were various commercial establishments mostly in Minnesota; like the others, this crew also camped extensively throughout the project.

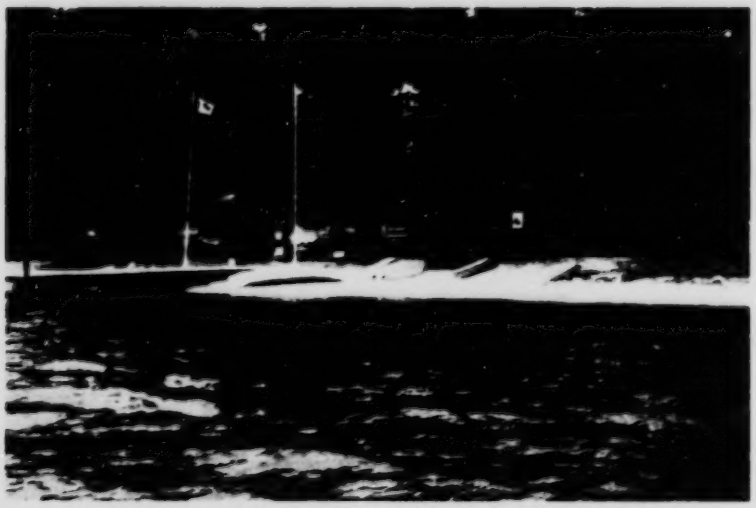
Like the other two crews working along this boundary section, this crew was challenged by the accessibility and navigability of the boundary, which is largely over water. Travel was by canoe and motorboat, and the crew took advantage of a towing service to transport large amounts of equipment.

The crew transports canoes and a tow boat at a railed portage.

Park officials distributed letters to visitors describing the work of the IBC. The crew were easily recognizable by their red jackets and signs on their boats.

Field Engineer Harrietha coordinated his crew's efforts with officials of the Canadian and U.S. Customs and Immigration services, the Ontario Ministry of Natural Resources, Voyageurs National Park, and the U.S. Forest Service. The Assistant Park Superintendent for Quetico Provincial Park was also contacted. The crew kept in contact with Quetico Park and BWCAW officials throughout the summer to keep them informed of what type of work they were doing and where.

The Lac La Croix ranger station will close after 1996.



Engineer to the Commission Noel Paquette visited the crew during the week of June 7, during the reconnaissance portion of the project.

Reconnaissance and Surveying, Lake of the Woods to Lake Superior, Ontario-Minnesota Boundary

Canadian Section Field Engineer Roger Shreenan's assignment for 1996 was to assist in the resurvey from Lac La Croix to South Lake.

The first objective was to perform a reconnaissance survey from Reference Monument 945 to Reference Monument 1175. This was accomplished in June and involved 230 monuments, of which 24 were not found and 27 needed repairs. Most of the damaged monuments were affected by either frost or vandalism.

Another objective was to locate existing geodetic control in the area: sufficient geodetic monuments were located to control the GPS survey planned for the season. A total of 27 monuments were visited, and 14 were chosen as control.

Reference Monuments like this one found on the southern portion of the Granite River, placed high on the river bank, were protected from tourists seeking souvenirs.

The easy accessibility and unobstructed view at Reference Monument 1060 make it a perfect GPS site.

The Global Positioning System, with its constellation of 24 satellites, allows the boundary surveyor to achieve rapid, accurate measurements at any time of the day or night, in any kind of weather.

Another objective was to process the data collected from GPS observations from Reference Monument 503 to Reference Monument 947. Parts of the 1995 field survey were also processed in preparation for upcoming adjustments in Geolab, the software program that the IBC uses to adjust GPS observations.

This was the third year of a four-year project to resurvey the Ontario-Minnesota boundary. The section surveyed in 1996 is largely water, with just a small portion over land at portages between lakes and rivers.

Reference Monument 1122, east of Gunflint Lake, was recovered late in the season after the water had substantially receded.

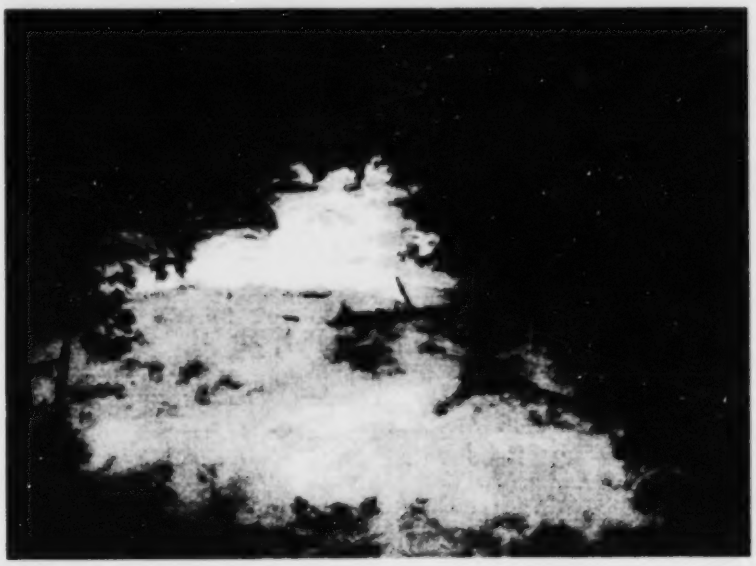
Field Engineer Shreenan hired a crew of three survey assistants for the summer season, including one who had participated in the 1995 surveying effort. During the reconnaissance phase of the survey, the team was headquartered at Gunflint Trail, Minnesota. They moved to other commercial accommodations as necessary and also camped along the boundary. Camping trips lasted from two to four days.

Permits were coordinated through Citizenship and Immigration Canada and Revenue Canada. In addition, the field engineer contacted the Gunflint Ranger Station regarding restrictions on Saganaga Lake. The U.S. Forest Service provided permits for camping on the U.S. side of the boundary.

Although this team was granted permission to use outboard motors in Quetico Provincial Park, they elected to use paddles as much as possible.

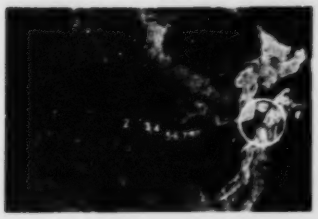
Once the reconnaissance was complete, the team selected stations to be occupied by GPS. Main stations were selected at about every 10 kilometers, and rapid static stations at intervals of one to two kilometers. The main stations were to be occupied in a static mode while simultaneously collecting GPS measurements at geodetic control stations. When this data is processed holding the control stations fixed, extremely reliable values can be placed on the main reference monuments. Six main stations were selected between Saganaga Lake and South Lake.

Control stations placed years ago when triangulation was the conventional survey method were often placed on high cliffs from which much of the surrounding countryside can be seen. These sites are often excellent GPS stations.



Raging rapids on the Granite River challenged the field crew.

Boundary Maintenance, West Line, New York-Quebec Boundary



In 1996, Engineering Technician Kyle Hipsley of the U.S. Section's Eastern Regional Field Office was responsible for boundary monument maintenance from the Gulf of Maine to Monument 429-7 at the Coburn Gore, Maine-Woburn, Quebec border crossing. In addition, he was in charge of clearing and seeding the West Line vista from the point at which that work was stopped in 1995 to as far west as possible.

With a crew of four seasonal hires, the summer season's work began in mid-June near Monument 609A. Working a week of four ten-hour days, the crew had completed clearing the vista to just west of Monument 616 by the end of the month. With the authorization of overtime in September, the crew was able to clear as far west as Monument 663.

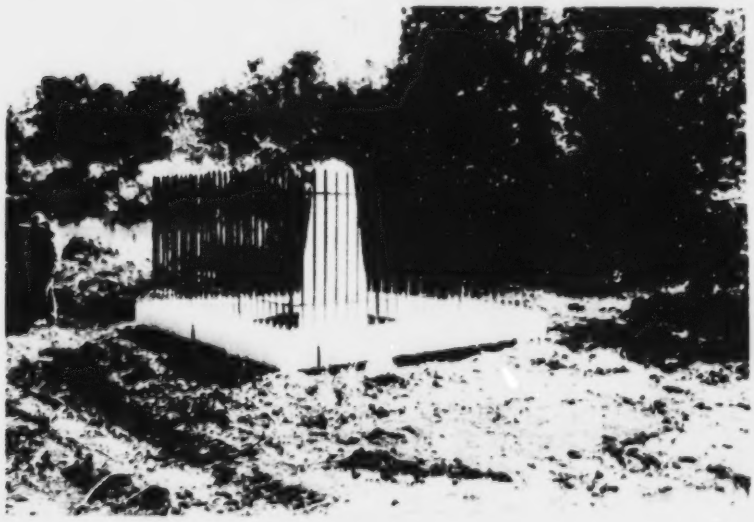
The vista at monument 613-76 after clearing. A line disk is set near the flag in the foreground.

Clearing activities were hampered by problems with the bulldozers and other vehicles. Other challenges included rocky terrain near Monument 616. Near Monument 626, the crew encountered many piles of rocks that had to be buried. Huge piles of rocks were also buried near Monument 657A.

Rock piles found between Monuments 658 and 659.

At the conclusion of the field season, 24.6 miles (39.6 kilometers) of boundary had been bulldozed, groomed, and seeded, and 117 boundary monuments recovered, of which 103 were cleaned and painted. Of the boundary monuments recovered, 20 were found to be in need of repair and 10 require replacement. Ten monuments were searched for but not found.

Monument 646 after cleaning and painting.



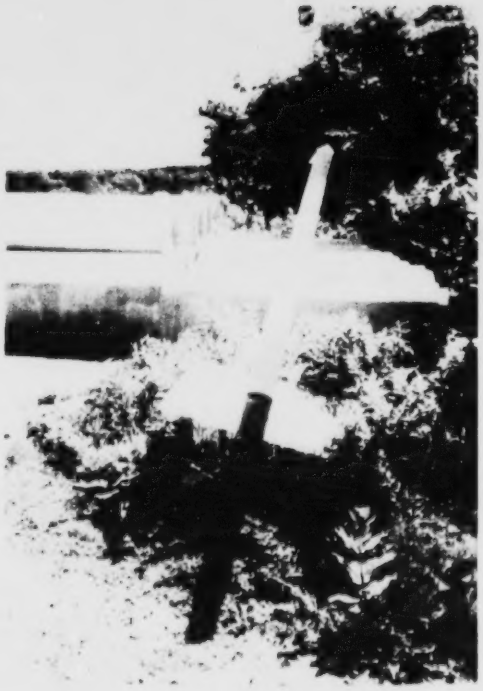
Deputy Commissioner of the U.S. Section Clyde Moore, Canadian Commissioner Michael O'Sullivan, and Engineer to the Canadian Section Noel Paquette inspected the vista clearing work in August.

The view east toward Monument 653 in the early 1900s.

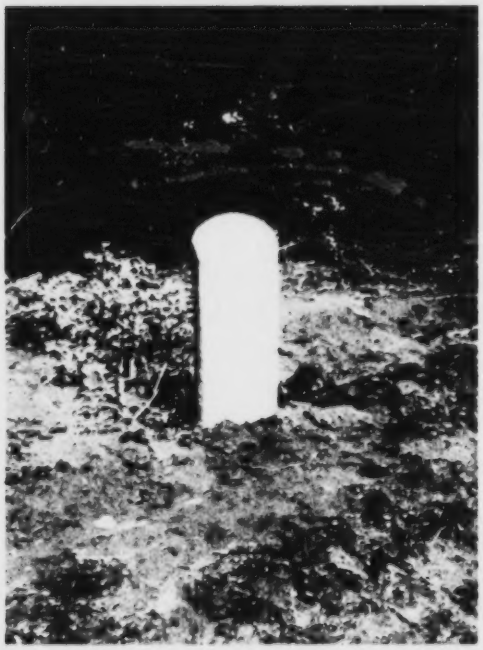
The same view from Monument 653 after clearing the vista in 1996.

Mr. Hipsley also handled several inquiries during the year. He was contacted by a Canadian fiber-optic company that wants to put a cable across the St. Croix-Vanceboro bridge, and also responded to a request for survey information from Champion Paper, which owns most of the land bordering Canada on the southern part of the Highlands on the U.S. side of the boundary. He also inspected Monument 653A, which was damaged as a result of a construction project and will be replaced, and investigated a complaint regarding bulldozing near Monument 521A.

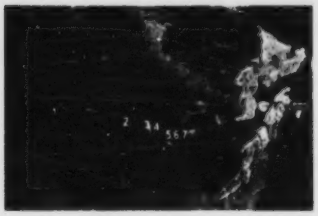
Monument 653A was moved during construction of a new Canadian port of entry.



This bench mark was originally set by the Canadian Department of Public Works in 1844.



Commissioners' Inspections



Noel Paquette, Engineer to the Canadian Section, left Ottawa on June 7, 1996, to supervise Joe Harrietha's crew at Lac La Croix. Mr. Harrietha made a quick trip to Ottawa to attend the birth of his first child. The crew at Lac La Croix was involved in reference monument reconnaissance between Reference Monuments 502 and 761. During this trip, Mr. Paquette also inspected the work being done by Carl Gustafson's and Roger Shreenan's crews. Mr. Gustafson, operating from Ely, Minnesota, was involved in reference monument reconnaissance and maintenance along a segment between Reference Monuments 502 and 944. Mr. Shreenan, operating from a resort on Gunflint Lake, was doing reconnaissance between Reference Monuments 944 and 1175. This was also a good opportunity to inspect the Height of Land Portage, where clearing was planned for later in the season.

A water lily in the clear waters of Knife Lake near Reference Monument 911.

Art and artifacts like these paintings from native cultures were observed by field crews in preserved wilderness at the Ontario-Minnesota boundary.

Canadian Commissioner Michael O'Sullivan and Engineer to the Commission Noel Paquette met with U.S. Deputy Commissioner Clyde Moore at the Blackpool Port-of-Entry on August 12. The purpose of the trip was to inspect the vista bulldozing, grooming, and seeding done on the Quebec-New York boundary by Kyle Hipsley's crew of the United States Section.

Commissioner O'Sullivan traveled to Malta, Montana, on September 25 to inspect the monument maintenance operation under the responsibility of Marvin Crabtree. The Commissioner witnessed the reconstruction of Monument 443 by Mr. Crabtree's crew before moving on to inspect a few border crossings on the Montana-Saskatchewan boundary. U.S. Deputy Commissioner Moore also paid a visit to Mr. Crabtree's crew in September.

Engineer to the Commission Paquette carried out an inspection of the vista clearing contract underway on the Manitoba-Minnesota boundary on November 24 and 25. The contract began at the Red River, near Monument 833, and ended at Monument 866 on the East Side of the Roseau River. The clearing was done under very cold and snowy conditions and met the requirements of the IBC.

U.S. Commissioner Thomas Baldini and Canadian Commissioner Michael O'Sullivan.

Thomas L. Baldini is Appointed

Mr. Thomas L. Baldini, of Marquette, Michigan, assumed his presidential appointment as Commissioner of the United States Section of the IBC on January 26. Mr. Baldini also serves as the Chairman of the United States Section of the International Joint Commission. Prior to his appointments to the IBC and IJC, Mr. Baldini held a position with Marquette Public Schools from 1991 to 1994 and served in several capacities in the administration of Michigan Governor James Blanchard from 1983 to 1990.

Suzanne Jacques Resigns

Suzanne Jacques, who had served as Canadian Commissioner since 1991, resigned her post on June 12. She moved to a position with the Canadian National Railway as Manager of Land Inventory for Central Canada and United States.

Michael O'Sullivan is Appointed

On June 13, the Canadian Government confirmed the appointment of the Surveyor General as the Canadian member of the IBC. Mr. Michael O'Sullivan, Surveyor General for Canada Lands and Director of the Legal Surveys Division, will assume the additional responsibility of International Boundary Commissioner for Canada. Before joining the Federal Government, Mr. O'Sullivan was a partner in private practice with surveying and mapping firms in Ontario between 1964 and 1988.

Alain Jacob Transfers

Alain Jacob accepted a position with the Eastern Regional Operation Centre of the Legal Surveys Division following his assignment with the Geomatics Professional Development Program. Jacob had been a field engineer with the Commission since 1989.

Leslie Smith Transfers

Leslie Smith moved to a position with the Northern Regional Operation Centre of the Legal Surveys Division in July following five successful summers as party chief with the IBC.

Roger Shreenan Takes Temporary Assignment

Roger Shreenan, a survey engineer from the Geomatics Professional Development Program, accepted a six-month field assignment with the Commission.

Regulatory Work

During 1996, the IBC Commissioners considered and approved the following regulatory matters:

- Power line construction at Monument 388B, Alberta-Montana
- Temporary Customs Office installation at Stewart/Hyder, British Columbia-Alaska
- Pipeline construction, Niagara River, three locations between Turning Points 114 and 115, Ontario-New York
- Pipeline construction, Niagara River, between Turning Points 143 and 144, Ontario-New York
- Pipeline construction, St. Clair River, two locations between Turning Points 199 and 200, Ontario-Michigan
- Pipeline construction, St. Mary's River, two locations between Turning Points 259 and 260, Ontario-Michigan
- Pipeline construction, St. Lawrence River, between Turning Points 48 and 49, Ontario-New York
- Pipeline construction, three locations near Monument 840, Manitoba-Minnesota
- Pipeline Construction near Monument 627A, Quebec-Vermont
- Pipeline construction, St. Clair River, between Turning Points 204 and 205, Ontario-Michigan
- Fiber optic cable crossing, St. Croix River, New Brunswick-Maine
- Emergency road construction, Midway, British Columbia-Washington

Preview of 1997

Each year the United States and Canadian Commissioners jointly decide on field activities to be carried out during the following year. These activities are chosen at the fall meeting from among the priorities established in the International Boundary Commission Long Range Forecast, as well as from information provided during inspections by the Commissioners, field officers, law enforcement agencies, and other persons interested in boundary demarcation. The activities scheduled for 1997 include the following:

United States Section

The Eastern Regional Office will continue vista bulldozing, grooming, and seeding operations along the New York-Quebec portion of the 45th Parallel boundary.

It is anticipated that funds will not be available for conducting any field operations from the Central Regional Office. The field officer assigned to this office, who is currently furloughed, is expected to return to duty early in the year and will probably be attached to the Western Regional Office for the field season.

The Western Regional Office will continue monument maintenance along the Montana-Alberta section of the 49th Parallel boundary.

Maintenance of the range mark system in Passamaquoddy Bay will be carried out. A contract for this project was let in 1996; however, the work is not to be accomplished until 1997.

Canadian Section

The Canadian Section plans to operate with three field crews. Two crews will be deployed along the Ontario-Minnesota boundary to continue the monument and resurvey work along this section of the boundary. The third crew will be assigned to vista clearing on the shore of the river crossings in Southeast Alaska. Reconnaissance for Global Positioning System (GPS) surveys will also be carried out.

It is also planned to contract for vista clearing in the Fraser Valley on the British Columbia-Washington segment of the 49th Parallel boundary.

Certified Statement of Expenditures

The following is a statement of comparative expenditures jointly incurred by the commissioners of the United States and Canadian Sections in maintaining the demarcation of the international boundary line in accordance with the provisions of the treaty of 1925, as of March 31, 1996.

	U.S. Section (U.S. $)	*Canadian Section (Canadian $)*
Total to March 31, 1995	***$7,409,822.25***	***$7,457,714.07***
From April 1, 1995 to March 31, 1996:		
Vermont-Quebec	*80,387.76*	
Ontario-Minnesota		*218,591.75*
British Columbia-Washington		*10,374.14*
North Dakota/Minnesota-Manitoba	*69,334.73*	
Montana/North Dakota-Saskatchewan	*81,977.70*	
GPS Survey-49th Parallel	*16,990.07*	
Other Expenditures:		
Point Roberts and Blaine Range Lights	*2,908.34*	*4,061.38*
Vehicle Repair:		
Headquarters		*8,749.95*
Field		*5,508.25*
Vehicle Rental		*1,200.00*
Geodimeter Repair		*2,645.00*
Upgrade to GPS Receivers		*16,600.00*
Purchase of Bridge Plaques	*274.59*	
Purchase of Boundary Witness Signs		*6,708.00*
Pictures for 1993 Annual Report	*25.87*	
1993 Annual Report, Costs to 3/31/95		*2,215.30*
Binding of 1991-92 Technical Appendix		*705.85*
Vista Clearing Contracts:		
North Line	*50,517.77*	
49th Parallel		*21,086.00*
Subtotal	***$302,416.83***	***$298,445.52***
Total to Date	***$7,712,239.08***	***$7,756,159.69***

APPENDIX A

DETAILED MAINTENANCE AND SURVEY OPERATIONS

DETAILED MAINTENANCE AND SURVEY OPERATIONS

Abbreviations used in the following tables:

Monument:	MON	
Reference Monument:	RM	
Monument Recovered:	G	in good condition
	F	in fair condition (in need of minor repair)
	P	in poor condition (in need of major repair)
	D	destroyed (evidence found but monument not in place)
	N	not recovered (no evidence found or inadequate search)
Monument Rebuilt:	R	new base built in same location
Monument Repaired:	B	minor repairs to base (new cap, cracks patched, etc.)
	PL	plumbed and/or dirt packed around base
	O	new obelisk installed
	OM	holes in obelisk mended
	OW	holes in obelisk welded

British Columbia-Washington Boundary (49th Parallel)

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 0		G				
MON 1		G				
MON 2		G				
MON 2A-70		D				
MON 2B		G				
MON 3		G				
MON 3A		G				
MON 3B		G				
MON 4		G				
MON 5		G				
MON 5A		G				
MON 5B		G				
MON 5C		G				
MON 5D		G				
MON 5X		G				
MON 5E-92		G				

(continued)

DETAILED MAINTENANCE AND SURVEY OPERATIONS

British Columbia-Washington Boundary (49th Parallel)- Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 5F-92		G				
MON 6		G				
MON 7		G				
MON 8		P		PL		
MON 9		G				
MON 10		G				
MON 11		G				
MON 12		G				
MON 13		G				
MON 14		G				
MON 15		G				
MON 16		G				
MON 17		G				
MON 18		G				
MON 19		G				
MON 19A		G				
MON 20		G				
MON 21		G				
MON 22		G				
MON 23		P				
MON 24		G				
MON 25		G				
MON 26		G				
MON 27		G				
MON 28		G				

(continued)

British Columbia-Washington Boundary (49th Parallel)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 29		G				
MON 30		G				
MON 30AA	X					
MON 30A		G				
MON 31A		G				
MON 31B		N				
MON 32		G			X	
MON 33		G				
MON 34		G			X	
MON 35		G			X	
MON 36		G			X	
MON 37		G			X	
MON 38		G			X	
MON 39		G			X	

TOTALS:

ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED
1	50G	0	1	7
			2P	
			1D	
			1N	

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
Range Tower Pt. Roberts West		G				
Range Tower Pt. Roberts Middle		G				
Range Tower Pt. Roberts East		G				

(continued)

British Columbia-Washington Boundary (49th Parallel)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
Range Tower Bdry. Bay East Side		P		X		
Range Tower Bdry. Bay East Shore		G				

TOTALS:

ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED
0	4G 1P	0	1	0

Montana/North Dakota-Saskatchewan/Manitoba Boundary (49TH Parallel)

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 443		P	R		X	X
MON 444		P	R		X	X
MON 445		P	R		X	X
MON 446		P	R		X	X
MON 446A		G				
MON 446AA	X				X	X
MON 446AA1	X				X	X
MON 447		P	R		X	X
MON 447A	X				X	X
MON 448		G				
MON 449		P	R		X	X
MON 449A	X					X
MON 450		P	R		X	X
MON 451		P	R		X	X
MON 451A	X				X	X
MON 452		P	R		X	X

(continued)

Montana/North Dakota-Saskatchewan/Manitoba Boundary
(49th Parallel)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 453		P	R		X	X
MON 453A	X					X
MON 454		P	R		X	X
MON 454A	X					X
MON 455		P	R		X	X
MON 456		G				
MON 456A	X					X
MON 457		P	R		X	X
MON 457A	X					X
MON 458		P	R		X	X
MON 458A	X					X
MON 458B	X					X
MON 459		P	R		X	X
MON 460		P	R		X	X
MON 460A	X					X
MON 461		P	R		X	X
MON 461A	X					X
MON 462		P	R		X	X
MON 463		P	R		X	X
MON 463A		G				
MON 463AA	X					X
MON 463B		G				
MON 464		P	R		X	X
MON 464A	X					X
MON 465		G				
MON 466		P	R		X	X

(continued)

Montana/North Dakota-Saskatchewan/Manitoba Boundary
(49th Parallel)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 466A	X					X
MON 467		P	R		X	X
MON 467A	X					X
MON 468		P	R		X	X
MON 469		P	R		X	X
MON 469A	X					X
MON 469B	X					X
MON 470		P	R		X	X
MON 470A	X					X
MON 470B	X					X
MON 470C	X					X
MON 471		P	R		X	X
MON 472		P	R		X	X
MON 472A	X					X
MON 473		P	R		X	X
MON 473A	X				X	X
MON 474		P	R		X	X
MON 474A	X					X
MON 475		P	R		X	X
MON 476		P	R		X	X
MON 477		G			X	X
MON 477A	X					X
MON 478		P	R		X	X
MON 478A	X					X
MON 478B	X					X

(continued)

Montana/North Dakota-Saskatchewan/Manitoba Boundary
(49th Parallel)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 479		P	R		X	X
MON 479A	X					X
MON 479B	X					X
MON 480		P	R		X	X
MON 480A	X					X
MON 480B	X					X
MON 480C	X					X
MON 481		P	R		X	X
MON 481A	X					X
MON 482		P	R		X	X
MON 483		P		PL		X
MON 483A	X					X
MON 484		P	R		X	X
MON 485		P	R		X	X
MON 486		P	R		X	X
MON 641		G			X	
MON 642		G			X	
MON 642A		G			X	
MON 643		G			X	
MON 644		G			X	
MON 644A		G			X	
MON 645		G			X	
MON 646		G			X	
MON 646A		G				
MON 647		G			X	

(continued)

Montana/North Dakota-Saskatchewan/Manitoba Boundary
(49th Parallel)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 647A		G				
MON 648		G			X	
MON 649		G			X	
MON 649A		G				
MON 649B		G			X	
MON 649C		G				
MON 650		G			X	
MON 650A		G				
MON 651		G			X	
MON 651A		G				
MON 652		G			X	
MON 653		G			X	
MON 654		G			X	
MON 655		G			X	
MON 656		G			X	
MON 657		G			X	
MON 658		G			X	
MON 659		G			X	
MON 660		G			X	
MON 660A-66		G			X	
MON 660B-66		G			X	
MON 661		G			X	
MON 662		G			X	
MON 663		G			X	
MON 664		G			X	

(continued)

Montana/North Dakota-Saskatchewan/Manitoba Boundary
(49th Parallel)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 665		G			X	
MON 665A		G				
MON 666		G			X	
MON 666A		G				
MON 667		G			X	
MON 667A		G				
MON 668		G			X	
MON 668A		G				
MON 669		G			X	
MON 669A		G				
MON 669B		G				
MON 670		G			X	
MON 670A		G			X	
MON 670B		G				
MON 671		G			X	
MON 671A		G				
MON 672		G			X	
MON 672A-90		G			X	
MON 672B-90		G			X	
MON 672C		G				
MON 673		G			X	
MON 673A		G				
MON 674		G			X	
MON 674A		G				
MON 675		G			X	

(continued)

Montana/North Dakota-Saskatchewan/Manitoba Boundary
(49th Parallel)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 675A		G				
MON 676		G			X	
MON 676A		G				
MON 677		G			X	
MON 678		G			X	
MON 679		G			X	
MON 679A		G				
MON 680		G			X	
MON 680AA		G				
MON 680A		G			X	
MON 680B		G			X	
MON 680C		G				
MON 681		G			X	
MON 681A		G				
MON 681B		G				
MON 682		G			X	
MON 683		G			X	
MON 684		G			X	
MON 685		G			X	
MON 686		G			X	
MON 687		G			X	
MON 688		G			X	
MON 689		G			X	
MON 690		G			X	
MON 691A		G				
MON 691		G			X	

(continued)

DETAILED MAINTENANCE AND SURVEY OPERATIONS

Montana/North Dakota-Saskatchewan/Manitoba Boundary (49th Parallel)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 692		G			X	
MON 693		G			X	
MON 694		G			X	
MON 694A		G				
MON 694B		G				
MON 695		G			X	
MON 695A		G			X	
MON 695B		G			X	
MON 695C		G				
MON 695D		G				
MON 697		G			X	

TOTALS:

ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED
35	104G	39	1	113
	40P			

Manitoba-Minnesota Boundary (49th Parallel)

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 833		G				
MON 833A		G				
MON 833B		G				
MON 850		G				
MON 851		G				
MON 852		G				
MON 856		G				
MON 866		G				

TOTALS:

ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED
0	8G	0	0	0

DETAILED MAINTENANCE AND SURVEY OPERATIONS

Minnesota-Manitoba Boundary (49th Parallel)

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 867		G			X	
MON 868		G			X	
MON 869		G			X	
MON 870		G			X	
MON 871		G			X	
MON 872		G			X	
MON 873		G			X	
MON 874		G			X	
MON 875		G			X	
MON 876		G			X	
MON 877		G			X	
MON 878		G			X	
MON 879		G			X	
MON 886		G			X	
MON 887		G			X	
MON 888		G			X	
MON 889		G			X	
MON 890		G			X	
MON 891		G			X	

TOTALS:

ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED
0	19G	0	0	19

DETAILED MAINTENANCE AND SURVEY OPERATIONS

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 325		G				
RM 330		G				
RM 332		G				
RM 334		G				
RM 335		G				
RM 336		G				
RM 338		G				
RM 339		G				
RM 340		G				
RM 343		G				
RM 345		G				
RM 347		G				
RM 349		G				
RM 351		G				
RM 353		G				
RM 357		G				
RM 358		G				
RM 360		G				
RM 361		G				
RM 365		G				
RM 375		G				
RM 377		G				
RM 378		G				
RM 379		G				
RM 380		G				

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 383		G				
RM 385		G				
RM 386		G				
RM 390		G				
RM 395		G				
RM 401		G				
RM 403		G				
RM 410		G				
RM 415		G				
RM 426-96	X					X
RM 427		F		PL		
RM 433-95		G				
RM 439-96	X					X
RM 443		G				
RM 445		G				
RM 451		G				
RM 452		G				
RM 453		G				
RM 454		G				
RM 455		G				
RM 462		G				
RM 467		G				
RM 468		G				
RM 473		G				
RM 476		G				

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 478		G				X
RM 479		G				X
RM 480		G				X
RM 494		G				X
RM 496		G				X
RM 499		G				X
RM 502		G				X
RM 503		G				X
RM 504		G				X
RM 505		G				X
RM 506		G				X
RM 507		G				X
RM 508		G				X
RM 509		P	R			X
RM 510		G				X
RM 511		D				X
RM 512		G				X
RM 513		P				X
RM 514		G				X
RM 515		G				X
RM 516		G				X
RM 517		P	R			X
RM 518		G				X
RM 519		G				X
RM 520		G				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 521		G				X
RM 522		G				X
RM 523		G				X
RM 524		G				X
RM 525		G				X
RM 526		G				X
RM 527		G				X
RM 528		G				X
RM 529		G				X
RM 530		G				X
RM 531		G				X
RM 532		G				X
RM 533		G				X
RM 534		G				X
RM 535		G				X
RM 536		G				X
RM 537		G				X
RM 538		G				X
RM 539		P		PL		X
RM 540		G				X
RM 541		G				X
RM 542		G				X
RM 543		G				X
RM 544		G				X
RM 545		P	R			X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 546		P				X
RM 547		G				X
RM 548		P				X
RM 549		P				X
RM 549-96	X					X
RM 550		G				X
RM 551		P	R			X
RM 552		G				X
RM 553		G				X
RM 554		G				X
RM 555		G				X
RM 556		D				X
RM 557		G				X
RM 558		G				X
RM 559		G				X
RM 560		G				X
RM 561		G				X
RM 562		G				X
RM 563		G				X
RM 564		G				X
RM 565		G				X
RM 566		G				X
RM 567		G				X
RM 568		G				X
RM 569		G				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 570		G				X
RM 571		G				X
RM 572		G				X
RM 573		G				X
RM 574		G				X
RM 575		G				X
RM 576		G				X
RM 577		G				X
RM 578		G				X
RM 579		G				X
RM 580		G				X
RM 581		G				X
RM 582		G				X
RM 583		P	R			X
RM 584		G				X
RM 585		G				X
RM 586		G				X
RM 587		G				X
RM 588		G				X
RM 589		P	R			X
RM 590		G				X
RM 591		P		PL		X
RM 592		G				X
RM 593		G				X
RM 594		G				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 595		G				X
RM 596		G				X
RM 597		G				X
RM 598		G				X
RM 599		G				X
RM 600		P	R			X
RM 601		G				X
RM 602		G				X
RM 603		G				X
RM 604		G				X
RM 605		G				X
RM 606		G				X
RM 607		G				X
RM 608		G				X
RM 609		G				X
RM 610		G				X
RM 611		G				X
RM 612		G				X
RM 613		G				X
RM 614		G				X
RM 615		G				X
RM 616		G				X
RM 617		G				X
RM 618		G				X
RM 619		G				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
Rm 620		G				X
RM 621		G				X
RM 622		G				X
RM 623		G				X
RM 624		G				X
RM 625		P	R			X
RM 626		G				X
Rm 627		G				X
RM 628		G				X
RM 629		G				X
RM 630		G				X
RM 631		G				X
RM 632		P	R			X
RM 633		G				X
RM 634		G				X
RM 635		G				X
RM 636		G				X
RM 637		P		PL		X
RM 638		G				X
RM 639		G				X
RM 640		G				X
RM 641		G				X
RM 642		G				X
RM 643		G				X
RM 644		G				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 645		G				X
RM 646		P	R			X
RM 647		P	R			X
RM 648		F				X
RM 649		P	R			X
RM 650		G				X
RM 651		G				X
RM 652		G				X
RM 653		P	R			X
RM 654		G				X
RM 655		G				X
RM 656		P				X
RM 657		G				X
RM 658		G				X
RM 659		G				X
RM 660		G				X
RM 661		G				X
RM 662		G				X
RM 663		F				X
RM 664		G				X
RM 665		G				X
RM 666		G				X
RM 667		G				X
RM 668		G				X
RM 669		P		PL		X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 670		G				X
RM 671		G				X
RM 672		G				X
RM 673		G				X
RM 674		G				X
RM 675		G				X
RM 676		N				X
RM 677		P	R			X
RM 678		G				X
RM 679		G				X
RM 680		G				X
RM 681		G				X
RM 682		G				X
RM 683		G				X
RM 684		G				X
RM 685		P	R			X
RM 686		G				X
RM 687		G				X
RM 688		G				X
RM 689		G				X
RM 690		G				X
RM 691		G				X
RM 692		P	R			X
RM 693		G				X
RM 694		G				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 695		G				X
RM 696		P	R			X
RM 697		P		PL		X
RM 698		G				X
RM 699		G				X
RM 700		G				X
RM 701		G				X
RM 702		P		PL		X
RM 703		G				X
RM 704		G				X
RM 705		G				X
RM 706		P	R			X
RM 707		G				X
RM 708		G				X
RM 709		G				X
RM 710		G				X
RM 711		G				X
RM 712		P		PL		X
RM 713		G				X
RM 714		P	R			X
RM 715		G				X
RM 716		G				X
RM 717		G				X
RM 718		G				X
RM 719		P	R			X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 720		G				X
RM 721		G				X
RM 722		P		PL		X
RM 723		G				X
RM 724		G				X
RM 725		F				X
RM 726		G				X
RM 727		G				X
RM 728		G				X
RM 729		P	R			X
RM 730		P	R			X
RM 731		G				X
RM 732		G				X
RM 733		G				X
RM 734		G				X
RM 735		G				X
RM 736		G				X
RM 737		G				X
RM 738		G				X
RM 739		G				X
RM 740		G				X
RM 741		G				X
RM 742		G				X
RM 743		G				X
RM 744		G				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 745		G				X
RM 746		G				X
RM 747		G				X
RM 748		G				X
RM 749		G				X
RM 750		G				X
RM 751		G				X
RM 752		G				X
RM 753		G				X
RM 754		P	R			X
RM 755		G				X
RM 756		G				X
RM 757		G				X
RM 758		G				X
RM 759		G				X
RM 760		P	R			X
RM 761		P	R			X
RM 762		G				X
RM 763		P	R			X
RM 764		G				X
RM 765		P	R			X
RM 766		P	R			X
RM 767		G				X
RM 768		G				X
RM 769		G				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 770		G				X
RM 771		G				X
RM 772		G				X
RM 773		G				X
RM 774		G				X
RM 775		P	R			X
RM 776		G				X
RM 777		G				X
RM 778		G				X
RM 779		G				X
RM 780		G				X
RM 781		G				X
RM 782		G				X
RM 783		G				X
RM 784		G				X
RM 785		G				X
RM 786		G				X
RM 787		G				X
RM 788		G				X
RM 789		G				X
RM 790		G				X
RM 791		G				X
RM 792		G				X
RM 793		G				X
RM 794		G				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 795		G				X
RM 796		G				X
RM 797		G				X
RM 798		G				X
RM 799		G				X
RM 800		G				X
RM 801		G				X
RM 802		G				X
RM 803		G				X
RM 804		F				X
RM 805		F				X
RM 806		F				X
RM 807		F				X
RM 808		F				X
RM 809		G				X
RM 810		F				X
RM 811		P	R			X
RM 812		P	R			X
RM 813		F				X
RM 814		F				X
RM 815		G				X
RM 816		P	R			X
RM 817		G				X
RM 818		G				X
RM 819		P	R			X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 820		F				X
RM 821		P	R			X
RM 822		P	R			X
RM 823		P				X
RM 823-96	X					X
RM 824		G				X
RM 825		F				X
RM 826		P	R			X
RM 827		G				X
RM 828		G				X
RM 829		G				X
RM 830		G				X
RM 831		G				X
RM 832		G				X
RM 833		G				X
RM 834		G				X
RM 835		D				X
RM 835-96	X					X
RM 836		G				X
RM 837		P	R			X
RM 838		G				X
RM 839		P	R			X
RM 840		F				X
RM 841		F				X
RM 842		P	R			X

(continued)

Ontario-Minnesota Boundary (Namakan Lake To Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 843		P	R			X
RM 844		G				X
RM 845		G				X
RM 846		P	R			X
RM 847		F				X
RM 848		G				X
RM 849		F		PL		X
RM 850		G		new disk set		X
RM 851		G				X
RM 852		F				X
RM 853		G				X
RM 854		P	R			X
RM 855		G				X
RM 856		G		new post set		X
RM 857		G				X
RM 858		G				X
RM 859		G				X
RM 860		P	R			X
RM 861		G				X
RM 862		G				X
RM 863		G				X
RM 864		F				X
RM 865		F				X
RM 866		G				X
RM 867		P	R			X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 868		G				X
RM 869		G				X
RM 870		G				X
RM 871		P	R			X
RM 872		G				X
RM 873		G				X
RM 874		G				X
RM 875		G				X
RM 876		G				X
RM 877		G				X
RM 878		G				X
RM 879		P	R			X
RM 880		G				X
RM 881		P	R			X
RM 882		G				X
RM 883		G				X
RM 884		G				X
RM 885		G				X
RM 886		G				X
RM 887		P	R			X
RM 888		P	R			X
RM 889		D				X
RM 889-96	X					X
RM 890		P	R			X
RM 891		D				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 892		P	R			X
RM 893		P	R			X
RM 894		P	R			X
RM 895		G				X
RM 896		G				X
RM 897		G				X
RM 898		F				X
RM 899		G				X
RM 900		G				X
RM 901		F				X
RM 902		G				X
RM 903		F				X
RM 904		G				X
RM 905		G				X
RM 906		G				X
RM 907		G				X
RM 908		F				X
RM 909		P	R			X
RM 910		P	R			X
RM 911		G				X
RM 912		G				X
RM 913		F				X
RM 914		G				X
RM 915		G				X
RM 916		P				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 917		G				X
RM 918		G				X
RM 919		G				X
RM 920		G				X
RM 921		G				X
RM 922		G				X
RM 923		P	R			X
RM 924		G				X
RM 925		P	R			X
RM 926		G				X
RM 927		G				X
RM 928		P	R			X
RM 929		G				X
RM 930		P	R			X
RM 931		G				X
RM 932		G				X
RM 933		G				X
RM 934		G				X
RM 935		G				X
RM 936		G				X
RM 937		G				X
RM 938		F				X
RM 939		G				X
RM 940		G				X
RM 941		G				X

(continued)

DETAILED MAINTENANCE AND SURVEY OPERATIONS

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 942		G				X
RM 943		G				X
RM 944		G				X
RM 945		N				X
RM 946		F				X
RM 947		G				X
RM 948		G				X
RM 949		N				X
RM 950		G				X
RM 951		G				X
RM 952		G				X
RM 953		G				X
RM 954		G				X
RM 955		G				X
RM 956		N				X
RM 957		G				X
RM 958		N				X
RM 959		G				X
RM 960		G				X
RM 961		G				X
RM 962		P				X
RM 963		G				X
RM 964		G				X
RM 965		G				X
Rm 966		G				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 967		G				X
RM 968		G				X
RM 969		N				X
RM 970		G				X
RM 971		G				X
RM 972		G				X
RM 973		G				X
RM 974		G				X
RM 975		G				X
RM 976		G				X
RM 977		G				X
RM 978		G				X
RM 979		N				X
RM 980		N				X
RM 981		G				X
RM 982		G				X
RM 983		G				X
RM 984		P				X
RM 985		P				X
RM 986		G				X
RM 987		G				X
RM 988		G				X
RM 989		G				X
RM 990		G				X
RM 991		G				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 992		G				X
RM 993		G				X
RM 994		G				X
RM 995		G				X
RM 996		G				X
RM 997		G				X
RM 998		G				X
RM 999		G				X
RM 1000		G				X
RM 1001		G				X
RM 1002		G				X
RM 1003		G				X
RM 1004		G				X
RM 1005		G				X
RM 1006		G				X
RM 1007		G				X
RM 1008		G				X
RM 1009		P				X
RM 1010		G				X
RM 1011		G				X
RM 1012		G				X
RM 1013		G				X
RM 1014		P				X
RM 1015		N				X
RM 1016		G				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 1017		G				X
RM 1018		P				X
RM 1019		G				X
RM 1020		G				X
RM 1021		G				X
RM 1022		G				X
RM 1023		G				X
RM 1024		G				X
RM 1025		G				X
RM 1026		N				X
RM 1027		G				X
RM 1028		G				X
RM 1029		G				X
RM 1030		G				X
RM 1031		N				X
RM 1032		G				X
RM 1033		G				X
RM 1034		G				X
RM 1035		G				X
RM 1036		G				X
RM 1037		N				X
RM 1038		G				X
RM 1039		G				X
RM 1040		G				X
RM 1041		G				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 1042		G				X
RM 1043		G				X
RM 1044		G				X
RM 1045		G				X
RM 1046		F				X
RM 1047		P				X
RM 1048		G				X
RM 1049		G				X
RM 1050		G				X
RM 1051		G				X
RM 1052		G				X
RM 1053		G				X
RM 1054		G				X
RM 1055		G				X
RM 1056		G				X
RM 1057		G				X
RM 1058		G				X
RM 1059		G				X
RM 1060		G				X
RM 1061		G				X
RM 1062		G				X
RM 1063		G				X
RM 1064		G				X
RM 1065		G				X
RM 1066		G				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 1067		G				X
RM 1068		G				X
RM 1069		N				X
RM 1070		G				X
RM 1071		G				X
RM 1072		G				X
RM 1073		N				X
RM 1074		G				X
RM 1075		G				X
RM 1076		G				X
RM 1077		G				X
RM 1078		G				X
RM 1079		G				X
RM 1080		G				X
RM 1081		G				X
RM 1082		G				X
RM 1083		G				X
RM 1084		G				X
RM 1085		G				X
RM 1086		G				X
RM 1087		G				X
RM 1088		G				X
RM 1089		G				X
RM 1090		G				X
RM 1091		G				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 1092		G				X
RM 1093		G				X
RM 1094		G				X
RM 1095		G				X
RM 1096		G				X
RM 1097		G				X
RM 1098		G				X
RM 1099		G				X
RM 1100		G				X
RM 1101		G				X
RM 1102		G				X
RM 1103		G				X
RM 1104		G				X
RM 1105		G				X
RM 1106		G				X
RM 1107		G				X
RM 1108		N				X
RM 1109		G				X
RM 1110		P				X
RM 1111		G				X
RM 1112		N				X
RM 1113		G				X
RM 1114		N				X
RM 1115		G				X
RM 1116		N				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 1116-49		N				X
RM 1117		N				X
RM 1118		G				X
RM 1119		G				X
RM 1120		G				X
RM 1121		G				X
RM 1122		G				X
RM 1123		G				X
RM 1124		G				X
RM 1125		G				X
RM 1126		G				X
RM 1127		N				X
RM 1128		N				X
RM 1129		G				X
RM 1130		N				X
RM 1131		G				X
RM 1132		G				X
RM 1133		N				X
RM 1134		F				X
RM 1135		G				X
RM 1136		F				X
RM 1137		F				X
RM 1138		G				X
RM 1139		G				X
RM 1140		G				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 1141		G				X
RM 1142		G				X
RM 1143		G				X
RM 1144		N				X
RM 1145		G				X
RM 1146		G				X
RM 1147		G				X
RM 1148		G				X
RM 1149		P				X
RM 1150		G				X
RM 1151		P				X
RM 1152		P				X
RM 1153		F				X
RM 1154		G				X
RM 1155		G				X
RM 1156		G				X
RM 1157		P				X
RM 1158		G				X
RM 1159		F				X
RM 1160		F				X
RM 1161		G				X
RM 1162		P				X
RM 1163		P				X
RM 1164		G				X
RM 1165		G				X

(continued)

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
RM 1166		G				X
RM 1167		G				X
RM 1168		P				X
RM 1169		G				X
RM 1170		N				X
RM 1171		P				X
RM 1172		P				X
RM 1173		F				X
RM 1174		G				X
RM 1175		G				X

TOTALS:

ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED
6	571G 36F 90P 26N 5D	57	13PL	0

Ontario-Minnesota Boundary (Northwesternmost Point of Lake of the Woods to Lake Superior)

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 1		G				
MON 2		G				
MON 3		P				
MON 4		P				
MON 5		P				
MON 6		P				
MON 7		P				

(continued)

Ontario-Minnesota Boundary (Northwesternmost Point of Lake of the Woods to Lake Superior)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 8		P				
MON 9		P				

TOTALS:

ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED
0	2G 7P	0	0	0

Ontario-Minnesota Boundary (Northwesternmost Point Lake of the Woods to Lake Superior)

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
Station 147-66		G				
Station 15311		G				
Station 15315		G				
Station 793012		G				
Station 963001 CBN		G				
Station BEAVER		G				
Station BEESKEES		G				
Station BOOT		G				
Station BM 1222		G				
Station CEDAR		N				
Station CRANE		G				

(continued)

Ontario-Minnesota Boundary (Northwesternmost Point Lake of the Woods to Lake Superior)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
Station DEVILFISH		G				
Station ELYPORT		G				
Station GRANITE		G				
Station HARRIET		G				
Station HUNCH		G				
Station JACKPINE		G				
Station MABEL		G				
Station MARAIS		G				
Station MOOSE		N				
Station ROCK		G				
Station STEVEN		G				
Station V-193		G				
Station WODAP		G				
Station ZERO		N				

TOTALS:

ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED
0	22G 3N	0	0	0

Vermont/New York-Quebec Boundary (West Line)

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 609A		G				
MON 610		G			X	X
MON 611-59		G			X	X
MON 612		G			X	X
MON 613-76		G			X	X
MON 614		P			X	X
MON 614A		G			X	X
MON 614B		F			X	X
MON 614C		F			X	X
MON 614D		G			X	X
MON 615		F		B	X	X
MON 616		G			X	X
MON 616A		G			X	X
MON 616B		G			X	X
MON 616C		G			X	X
MON 617		F			X	X
MON 618		G			X	X
MON 618A		G			X	X
MON 618B		G			X	X

(continued)

Vermont/New York-Quebec Boundary (West Line)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 619		G			X	X
MON 619A		P			X	X
MON 619B		P			X	X
MON 620		G			X	X
MON 620A		G			X	X
MON 620B		G			X	X
MON 621		P			X	X
MON 621A		F			X	X
MON 621B		G			X	X
MON 622		G			X	X
MON 622A		P				X
MON 623		G			X	X
MON 624		G			X	X
MON 625		F			X	X
MON 625A		F			X	X
MON 625B		F			X	X
MON 625C		G			X	X
MON 626		G			X	X
MON 626A		D				X
MON 627		G			X	X
MON 627A		P			X	X
MON 628		G			X	X
MON 629		G			X	X
MON 629A		G			X	X
MON 629B		G			X	X

(continued)

Vermont/New York-Quebec Boundary (West Line)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 629C		G			X	X
MON 629D		G			X	X
MON 629E		F			X	X
MON 629F		G			X	X
MON 630-64		P			X	X
MON 630A		G			X	X
MON 630B		F			X	X
MON 631		G			X	X
MON 632-633		F			X	X
MON 634		G			X	X
MON 635		G			X	X
MON 635A		F			X	X
MON 635B		F			X	X
MON 636		G			X	X
MON 637		G			X	X
MON 637A		G			X	X
MON 637B		G			X	X
MON 638		G			X	X
MON 638A		G			X	X
MON 638B		G			X	X
MON 639		G			X	X
MON 639A		G			X	X
MON 640		G			X	X
MON 640A		G			X	X
MON 640B		G			X	X

(continued)

Vermont/New York-Quebec Boundary (West Line)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 641		P			X	X
MON 641A-81		P			X	X
MON 641B		P			X	X
MON 641C		G			X	X
MON 642		G			X	X
MON 642W		D				X
MON 642A		G			X	X
MON 642B		G			X	X
MON 643-72		G			X	X
MON 643A		G			X	X
MON 643B		G			X	X
MON 643C		G			X	X
MON 643D		G			X	X
MON 644		F			X	X
MON 645		D				X
MON 645A		G			X	X
MON 646		F		B	X	X
MON 647		G			X	X
MON 648		F			X	X
MON 649		G			X	X
MON 649A		G			X	X
MON 649B		G			X	X
MON 650		P			X	X
MON 650A		G			X	X
MON 651		G			X	X

(continued)

DETAILED MAINTENANCE AND SURVEY OPERATIONS

Vermont/New York-Quebec Boundary (West Line)-Continued

DESIGNATION	ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED	DESCRIBED
MON 651A		G			X	X
MON 652		G			X	X
MON 652A		F			X	X
MON 653		G			X	X
MON 653A-76		D				X
MON 653B		D				X
MON 654		P			X	X
MON 655		G			X	X
MON 656		G			X	X
MON 657		G			X	X
MON 657A		G			X	X
MON 658		G			X	X
MON 659		G			X	X
MON 660		F			X	X
MON 661		F			X	X
MON 662		F			X	X
MON 663		G				
MON 663A		G				

TOTALS:

ESTABLISHED	RECOVERED	REBUILT	REPAIRED	PAINTED
0	75G 20F 12P 5D	0	2	103

DETAILED MAINTENANCE AND SURVEY OPERATIONS

VISTA MAINTENANCE

British Columbia-Washington Boundary (49th Parallel)

Kilometers of Vista Recleared:

Between Monument 0 and the Middle Range Tower..... 1

Monument 5 to Monument 39..... 44

Manitoba-Minnesota Boundary (49th Parallel)

Kilometers of Vista Recleared:

Monument 833 to Monument 866..... 55

Minnesota-Manitoba Boundary (49th Parallel)

Kilometers of Vista Recleared:

Monument 866 to Monument 879 and Monument 886 to Monument 891..... 30

(Note: Monument 879 to Monument 886 is a bog area where no vista clearing is required)

Vermont/New York-Quebec Boundary (West Line)

Kilometers of Vista Recleared (graded, groomed and seeded):

Monument 610 to Monument 663 (intermittently throughout)..... 39

Monument 667 to Monument 668..... 1

SURVEY OPERATIONS

Ontario-Minnesota Boundary (Namakan Lake to Rose Lake)

Kilometers of Boundary Surveyed.....233

Number of Points Occupied With GPS Equipment.....178

APPENDIX B

SUMMARY OF MAINTENANCE AND SURVEY OPERATIONS

SUMMARY OF MAINTENANCE AND SURVEY OPERATIONS

BOUNDARY MONUMENTS

Established	35
Recovered in Good Condition	257
Recovered in Fair Condition	20
Recovered in Poor Condition	61
Not Recovered	1
Found Destroyed	6
Replaced, Rebuilt or Repaired	43
Painted	242

REFERENCE MONUMENTS

Established	6
Recovered in Good Condition	572
Recovered in Fair Condition	36
Recovered in Poor Condition	89
Not Recovered	29
Found Destroyed	5
Replaced, Rebuilt or Repaired	64
Painted	0

CONTROL STATIONS

Established	0
Recovered in Good Condition	22
Not Recovered	3

RANGE TOWERS

Established	0
Recovered in Good Condition	4
Recovered in Poor Condition	1

KILOMETERS OF VISTA RECLEARED	170
KILOMETERS OF BOUNDARY SURVEYED	233
NUMBER OF POINTS OCCUPIED WITH GPS INSTRUMENTS	178

APPENDIX C

NAD 83 GEOGRAPHIC POSITIONS

ST. MARY'S RIVER

INTERNATIONAL BOUNDARY COMMISSION UNITED STATES AND CANADA

GEOGRAPHICAL POSITIONS - 1983 NORTH AMERICAN DATUM (CSRS)

STATION	LATITUDE	LONGITUDE	TO STATION	AZIMUTH (FROM SOUTH) FORWARDS	AZIMUTH (FROM SOUTH) BACKWARDS	DISTANCE	ELEVATION	COMMENTS
TP 218	45 49 16.487	83 35 49.849	TP 218				178.00	
			RM 2	206 34 12	26 37 12	12060.02	178.48	Michigan, 1911
			RM 1	221 35 08	41 39 48	12653.84	178.43	Ontario, 1911
RM 1	45 54 22.853	83 29 20.182	RM 1				178.43	Ontario, 1911
			RM 2	113 49 22	293 47 42	3282.34	178.48	Michigan, 1911
			TP 218	41 39 48	221 35 08	12653.84	178.00	
RM 2	45 55 05.770	83 31 39.522	RM 2				178.48	Michigan, 1911
			TP 218	26 37 12	206 34 12	12060.02	178.00	
			RM 1	293 47 42	113 49 22	3282.34	178.43	Ontario, 1911
TP 219	45 59 53.356	83 26 01.759	TP 219				178.00	
			TP 218	32 51 52	212 44 49	23394.33	178.00	
			RM 3	67 32 17	247 30 34	3329.00	180.00	Michigan, 1911
RM 3	45 59 12.136	83 28 24.698	RM 3					
TP 220	46 06 20.781	83 34 19.156	TP 220				178.00	
			RM 4	21 17 16	201 16 52	1984.19	180.19	Michigan, 1911
			TP 219	318 09 25	138 15 23	16044.46	178.00	
RM 4	46 05 20.901	83 34 52.688	RM 4					
TP 221	46 07 18.022	83 39 18.145	TP 221				178.00	
			TP 220	285 21 40	105 25 16	6659.16	178.00	
			RM 5	339 13 20	159 13 45	2123.33	178.75	Michigan, 1911
RM 5	46 06 13.723	83 38 43.074	RM 5					
TP 222	46 06 09.790	83 45 35.688	TP 222				178.00	
			TP 221	255 23 45	75 28 17	8376.62	178.00	
			RM 6	161 26 11	341 26 02	813.34	177.83	Ontario, 1911
RM 6	46 06 34.761	83 45 47.745	RM 6					
TP 223	46 07 07.805	83 49 34.930	TP 223				178.00	

District: St. Mary's River

State- Province: Michigan - Ontario

INTERNATIONAL BOUNDARY COMMISSION UNITED STATES AND CANADA

GEOGRAPHICAL POSITIONS - 1983 NORTH AMERICAN DATUM (CSRS)

STATION	LATITUDE	LONGITUDE	TO STATION	AZIMUTH (FROM SOUTH) FORWARDS	AZIMUTH (FROM SOUTH) BACKWARDS	DISTANCE	ELEVATION	COMMENTS
			RM 7	219 37 35	39 38 07	1498.23	178.73	Ontario, 1911
			TP 222	289 11 52	109 14 44	5440.94	178.00	
RM 7	46 07 45.177	83 48 50.418	RM 7					
TP 224	46 03 37.608	83 54 12.862	TP 224				178.00	
			TP 223	222 35 10	42 38 30	8818.75	178.00	
			RM 8	153 11 42	333 11 34	526.83	178.75	Ontario, 1911
RM 8	46 03 52.837	83 54 23.916	RM 8					
TP 225	46 03 24.281	83 57 19.921	TP 225				178.00	
			TP 224	264 08 17	84 10 31	4041.80	178.00	
			RM 9	215 47 32	35 47 49	873.60	178.87	Ontario, 1911
RM 9	46 03 47.230	83 56 56.149	RM 9					
TP 226	46 06 08.638	83 58 34.993	TP 226				178.00	
			TP 225	342 21 32	162 22 26	5324.87	178.00	
			RM 10	31 05 52	211 05 46	339.04	178.10	Michigan, 1911
RM 10	46 05 59.235	83 58 43.146	RM 10					
TP 227	46 07 05.865	84 00 22.917	TP 227				178.00	
			TP 226	307 18 38	127 19 56	2914.37	178.00	
			RM 11	236 34 49	56 35 03	511.21	177.65	Ontario, 1911
RM 11	46 07 14.983	84 00 03.044	RM 11					
TP 228	46 08 58.003	84 00 21.725	TP 228				178.00	
			TP 227	0 25 25	180 25 24	3462.48	178.00	
			RM 12	290 24 34	110 25 03	917.76	177.62	Ontario, 1911
RM 12	46 08 47.636	83 59 41.644	RM 12					
TP 229	46 11 14.372	84 04 37.920	TP 229				178.00	
			RM 13	225 19 36	45 19 50	601.71	178.88	Ontario, 1911
			TP 228	307 25 51	127 28 56	6923.48	178.00	

INTERNATIONAL BOUNDARY COMMISSION UNITED STATES AND CANADA

GEOGRAPHICAL POSITIONS - 1983 NORTH AMERICAN DATUM (CSRS)

STATION	LATITUDE	LONGITUDE	TO STATION	AZIMUTH (FROM SOUTH) FORWARDS	AZIMUTH (FROM SOUTH) BACKWARDS	DISTANCE	ELEVATION	COMMENTS
RM 13	46 11 28.073	84 04 17.966	RM 13				178.88	Ontario, 1911
			RM 14	144 19 19	324 18 38	2076.21	177.69	Michigan, 1911
RM 14	46 12 22.691	84 05 14.452	RM 14					
TP 230	46 12 36.448	84 05 09.103	TP 230				178.00	
			RM 14	15 06 22	195 06 18	439.98	177.69	Michigan, 1911
			TP 229	345 13 05	165 13 27	2620.91	178.00	
TP 231	46 14 29.111	84 06 29.910	TP 231				178.00	
			RM 15	280 29 43	100 29 57	410.99	178.78	Ontario, 1911
			TP 230	333 31 38	153 32 37	3885.83	178.00	
RM 15	46 14 26.685	84 06 11.048	RM 15					
TP 232	46 15 22.866	84 05 51.685	TP 232				178.00	
			TP 231	26 15 45	206 15 17	1850.78	178.00	
			RM 16	63 58 31	243 58 20	382.76	179.13	Michigan, 1911
RM 16	46 15 17.426	84 06 07.743	RM 16					
TP 233	46 16 04.865	84 06 55.714	TP 233				178.00	
			RM 17	117 42 38	297 42 27	377.46	178.22	Michigan, 1911
			TP 232	313 23 44	133 24 30	1887.33	178.00	
			RM 16	324 57 01	144 57 36	1789.12	179.13	Michigan, 1911
			RM 17	117 42 38	297 42 27	377.46	178.22	Michigan, 1911
RM 17	46 16 10.549	84 07 11.320	RM 17					
TP 234	46 18 53.506	84 07 10.201	TP 234				178.00	
			RM 18	292 38 31	112 38 49	553.16	178.15	Ontario, 1911
			TP 233	356 35 26	176 35 36	5216.32	178.00	
RM 18	46 18 46.608	84 06 46.340	RM 18					
TP 235	46 19 19.067	84 06 21.572	TP 235				178.00	
			TP 234	52 49 09	232 48 34	1305.89	178.00	

District: St. Mary's River

State- Province: Michigan - Ontario

INTERNATIONAL BOUNDARY COMMISSION UNITED STATES AND CANADA

GEOGRAPHICAL POSITIONS - 1983 NORTH AMERICAN DATUM (CSRS)

STATION	LATITUDE	LONGITUDE	TO STATION	AZIMUTH (FROM SOUTH)		DISTANCE	ELEVATION	COMMENTS
				FORWARDS	BACKWARDS			
			RM 19	340 29 56	160 30 03	584.61	177.81	Ontario, 1911
RM 19	46 19 01.220	84 06 12.450	RM 19					
TP 236	46 20 18.069	84 07 12.463	TP 236				178.00	
			RM 20	216 52 59	36 53 06	310.81	177.90	Ontario, 1911
			TP 235	329 08 12	149 08 49	2122.24	178.00	
RM 20	46 20 26.121	84 07 03.740	RM 20					
TP 237	46 22 20.744	84 08 20.598	TP 237				178.00	
			RM 21	56 46 31	236 46 22	307.90	178.58	Michigan, 1911
			TP 236	338 57 30	158 58 19	4058.32	178.00	
RM 21	46 22 15.280	84 08 32.649	RM 21					
TP 238	46 25 07.554	84 08 45.963	TP 238				178.00	
			RM 22	94 47 00	274 45 07	3339.06	180.05	Michigan, 1911
			TP 237	353 59 29	173 59 48	5179.09	178.00	
RM 22	46 25 16.542	84 11 21.788	RM 22					
TP 239	46 30 15.151	84 06 40.285	TP 239				178.00	
			TP 238	15 46 46	195 45 15	9869.28	178.00	
			RM 23	241 16 04	61 16 38	1115.18	178.80	Ontario, 1911
RM 23	46 30 32.510	84 05 54.417	RM 23					
TP 240	46 31 04.527	84 07 05.672	TP 240				178.00	
			RM 24	157 52 40	337 52 36	285.44	178.93	Ontario, 1911
			TP 239	340 27 12	160 27 31	1617.86	178.00	
RM 24	46 31 13.091	84 07 10.715	RM 24					
TP 241	46 31 15.874	84 07 24.246	TP 241				178.00	
			RM 24	286 35 34	106 35 44	300.94	178.93	Ontario, 1911
			TP 240	311 30 22	131 30 36	528.68	178.00	
TP 242	46 31 49.722	84 07 44.604	TP 242				178.00	

District: St. Mary's River

State- Province: Michigan - Ontario

INTERNATIONAL BOUNDARY COMMISSION UNITED STATES AND CANADA

GEOGRAPHICAL POSITIONS - 1983 NORTH AMERICAN DATUM (CSRS)

STATION	LATITUDE	LONGITUDE	TO STATION	AZIMUTH (FROM SOUTH) FORWARDS	AZIMUTH (FROM SOUTH) BACKWARDS	DISTANCE	ELEVATION	COMMENTS
			RM 25	235 39 39	55 39 46	230.95	180.65	Ontario, 1911
			TP 241	337 27 09	157 27 24	1131.66	178.00	
RM 25	46 31 53.941	84 07 35.656	RM 25					
TP 243	46 31 56.818	84 08 22.302	TP 243				178.00	
			RM 26	53 48 26	233 48 16	343.62	179.70	Michigan, 1911
			TP 242	285 15 01	105 15 28	832.70	178.00	
RM 26	46 31 50.246	84 08 35.315	RM 26					
TP 244	46 31 51.653	84 08 48.846	TP 244				178.00	
			TP 243	254 15 16	74 15 35	587.71	178.00	
			RM 26	278 34 11	98 34 21	291.61	179.70	Michigan, 1911
TP 245	46 31 41.796	84 09 13.401	TP 245				178.00	
			TP 244	239 48 51	59 49 09	605.39	178.00	
			RM 27	328 53 24	148 53 26	115.29	179.79	Michigan, 1911
RM 27	46 31 38.600	84 09 10.606	RM 27					
TP 246	46 31 34.676	84 10 00.765	TP 246				178.00	
			RM 28	48 21 53	228 21 38	583.44	178.33	Michigan, 1911
			TP 245	257 42 29	77 43 03	1033.10	178.00	
RM 28	46 31 22.122	84 10 21.224	RM 28					
TP 248	46 32 24.789	84 11 37.418	TP 248				178.00	
			RM 29	23 48 26	203 48 14	825.16	178.14	Michigan, 1911
			TP 247	320 49	140 01 31	1906.26	178.00	
RM 29	46 32 00.340	84 11 53.048	RM 29					
TP 249	46 32 02.565	84 13 33.385	TP 249				178.00	
			TP 248	254 28 04	74 29 28	2564.60	178.00	
			RM 30	307 42 47	127 43 01	523.06	178.52	Michigan, 1911
RM 30	46 31 52.202	84 13 13.968	RM 30					

District: St. Mary's River

State- Province: Michigan - Ontario

INTERNATIONAL BOUNDARY COMMISSION UNITED STATES AND CANADA

GEOGRAPHICAL POSITIONS - 1983 NORTH AMERICAN DATUM (CSRS)

STATION	LATITUDE	LONGITUDE	TO STATION	AZIMUTH (FROM SOUTH)		DISTANCE	ELEVATION	COMMENTS
				FORWARDS	BACKWARDS			
TP 250	46 30 02.844	84 15 17.486	TP 250				178.00	
			RM 31-94	165 51 32	345 51 27	533.45	178.38	Ontario, 1994
			TP 249	210 57 52	30 59 08	4311.62	178.00	
RM 31-94	46 30 19.597	84 15 23.599	RM 31-94					
TP 251	46 29 39.853	84 15 55.950	TP 251				178.00	
			RM 32	160 22 53	340 22 52	58.04	178.23	Ontario, 1911
			TP 250	229 07 06	49 07 34	1084.76	178.00	
RM 32	46 29 41.624	84 15 56.864	RM 32					
TP 252	46 29 34.517	84 16 34.675	TP 252				178.00	
			TP 251	258 42 42	78 43 10	842.12	178.00	
			RM 33	285 12 28	105 12 37	294.70	178.52	Michigan, 1911
RM 33	46 29 32.013	84 16 21.340	RM 33					
TP 253	46 29 34.383	84 17 37.706	TP 253				178.00	
			RM 34	135 10 03	315 09 53	397.74	178.69	Ontario, 1911
			TP 252	269 49 01	89 49 47	1344.19	178.00	
RM 34	46 29 43.517	84 17 50.857	RM 34					
TP 254	46 29 59.364	84 19 30.837	TP 254				178.00	
			RM 35-94	182 09 21	2 09 22	595.23	179.76	Ontario, 1994
			TP 253	287 43 14	107 44 36	2532.77	178.00	
RM 35-94	46 30 18.628	84 19 29.787	RM 35-94					
TP 255	46 30 27.019	84 20 31.053	TP 255				178.00	
			RM 36	2 22 06	182 22 05	748.71	183.81	Michigan, 1911
			TP 254	303 37 19	123 38 03	1541.92	178.00	
RM 36	46 30 02.792	84 20 32.504	RM 36					
TP 256	46 30 32.944	84 22 27.157	TP 256				178.00	
			TP 255	274 12 56	94 14 21	2482.06	178.00	

District: St. Mary's River

State- Province: Michigan - Ontario

INTERNATIONAL BOUNDARY COMMISSION UNITED STATES AND CANADA

GEOGRAPHICAL POSITIONS - 1983 NORTH AMERICAN DATUM (CSRS)

STATION	LATITUDE	LONGITUDE	TO STATION	AZIMUTH (FROM SOUTH) FORWARDS	AZIMUTH (FROM SOUTH) BACKWARDS	DISTANCE	ELEVATION	COMMENTS
			RM 37-44	352 06 25	172 06 29	890.35	185.14	Michigan, 1944
RM 37-44	46 30 04.383	84 22 21.423	RM 37-44					
TP 257	46 29 55.005	84 23 44.104	TP 257				178.00	
			RM 37-44	260 39 51	80 40 51	1786.63	185.14	Michigan, 1944
			RM 39	54 33 09	234 32 14	1981.78	186.03	Michigan, 1912
			TP 256	234 27 48	54 28 43	2015.95	178.00	
			RM 40-43	54 45 25	234 43 35	3979.64	186.16	Michigan, 1943
RM 39	46 29 17.776	84 24 59.802	RM 39					
TP 258	46 30 02.040	84 25 16.365	TP 258				178.00	
			TP 257	276 17 30	96 18 37	1979.25	178.00	
			RM 39	345 30 31	165 30 43	1411.69	186.03	Michigan, 1912
TP 259	46 29 20.656	84 26 43.065	TP 259				178.00	
			TP 258	235 20 28	55 21 31	2247.48	178.00	
			RM 40-43	335 21 28	155 21 47	1360.58	186.16	Michigan, 1943
RM 40-43	46 28 40.605	84 26 16.470	RM 40-43				186.16	Michigan, 1943
			RM 39	234 55 45	54 56 41	1997.89	186.03	Michigan, 1912
TP 260	46 27 10.266	84 28 32.569	TP 260				178.00	
			RM 41	179 59 56	359 59 56	1303.56	186.62	Ontario, 1912
			TP 259	210 06 48	30 08 08	4654.89	178.00	
RM 41	46 27 52.482	84 28 32.570	RM 41				186.62	Ontario, 1912
TP 262	46 38 03.412	84 45 46.420	TP 262				178.00	
			RM 43-94	248 18 03	68 19 47	3270.58	184.28	Ontario, 1994
			TP 261	320 35 53	140 44 51	24931.32	178.00	
RM 43-94	46 38 42.547	84 43 23.525	RM 43-94					

District: St. Mary's River

State- Province: Michigan - Ontario

We certify that the foregoing is a true record of the work done by the Commissioners during the year ending December 31, 1996, on the maintenance of the International Boundary Line between the United States of America and Canada, and that the plats and tables submitted herein show the true locations and geodetic positions of all monuments moved and all additional monuments and marks established within the year, in accordance with the provisions of Article IV of the Treaty between the United States of America and His Britannic Majesty in respect of Canada signed at Washington, February 24, 1925.

Thomas L. Baldini
Commissioner
United States

Michael O'Sullivan
Commissioner
Canada